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EDITORIAL.

Prevention of Adulteration.

THE necessity for adopting some general regulation for preventing the adulteration of foods and medicines has frequently, during late years, received the attention of sanitarians, pharmacists, and legislators. So far back as 1848, the N. Y. College of Pharmacy initiated a movement which resulted in the establishment of a system for inspection of drugs and medicines at the leading ports of entry, and in the founding of the American Pharmaceutical Association, one of the chief objects of which has been the encouragement of greater attention to this important subject.

The published reports of several of the State Boards of Health, notably those of Massachusetts and Michigan, contain many valuable essays upon one or another feature of this question, and in 1879, Dr. E. R. Squibb presented to the Medical Society of the State of New York a draft for a proposed law to prevent the adulteration of food and medicine, and to create a State Board of Health.* During the past year, one of the most important contributions to the literature of this subject appeared in the form of a circular published by the National Board of Health, a portion of which has been republished in NEW REMEDIES (*vide* Vol. IX., p. 273).

More recently, the National Bord of Trade, appreciating the importance of the subject, and having had placed at its disposal $1,000 as a prize or prizes to be given for a draft of an Act or Acts, accompanied with an essay, designed to prevent injurious adulteration and regulate the sale of food, appointed a committee of experts, who, making use of the essays submitted, have drafted a proposed act for the consideration of Congress.

We regard the subject as one of such general importance to the medical and pharmaceutical professions that we have published in this number the Act drafted by the committee of the National Board of Trade, and, together with it, a communication from a correspondent who has given the subject much attention.

It is to be hoped that the Act which may eventually be adopted will have first been so modified by general criticism as to reduce to a minimum the opportunities for an inefficient discharge of duty by the inspectors, and evasion of its true intent by dealers.

Pharmacy in Illinois.

THE pharmacists of Illinois have, with great unanimity of action, organized a State Pharmaceutical Association and adopted a draft for an Act to regulate the practice of pharmacy in that State. The Act contemplates the appointment of a Board of Pharmacy, consisting of five members. The act provides for the annual licensing of such persons as are qualified according to its requirements, and contains a number of valuable features that might well receive the attention of those who may be interested in the drafting of Pharmacy Acts for other States.

* See supplement to NEW REM. for March, 1879.

MATERIA MEDICA, PHARMACY, AND THERAPEUTICS.

Chloride of Zinc as a Reagent for Alkaloids, Glucosides, etc.

A. JORISSEN finds that the following bodies produce characteristic reaction with pure zinc chloride prepared as stated below: strychnine, bright rose; thebaine, yellow; narceine, olive-green; delphinine, brownish-red; berberine, yellow; veratrine, red, quinine, pale green; digitaline [?], chestnut-brown; salicin, violet-red; santonin, violet-blue; cubebine, carmine-red. In case of strychnine, the reaction can be produced with 1 decimilligm. of the hydrochlorate. Brucine and aconitine, if present, interfere. To obtain the blue coloration characteristic of santonin, the mixture during evaporation must be continually stirred with a glass rod drawn out to a point. Digitaline gives first a green solution, similar to that produced by heating with hydrochloric acid. After evaporation, there remains upon the porcelain a chestnut-brown spot which quickly blackens. The salicin reaction can be used for detecting the fraudulent addition of this body to quinine sulphate. Albuminoid substances, if heated for a time with the zinc chloride solution, leave a violet stain upon the porcelain, which may be distinguished by its instability from the colorations mentioned above. As a rule it quickly blackens. Jorissen's method of operating is as follows: a solution of the alkaloid or its hydrochlorate is evaporated to dryness upon the water-bath, say in the inside of the lid of a porcelain crucible; two or three drops of the test solution —1 gm. fused zinc chloride in 30 cc. concentrated hydrochloric acid and 30 cc. water—are placed upon the residue, and dried afresh on the water-bath. The coloration begins on the outer edge, and spreads inward as the water is expelled.—*Zeitsch. f. anal. Chem.*, 1880, and *Chem. News*, Dec. 23d.

The Cola Nut and its Uses.*

COLA ACUMINATA R. Br.† is a tree belonging to the natural family of Sterculiaceæ, growing to a height of about 40 feet. Its leaves are lanceolate, 4 to 8 inches in length, 1 to 1½ inches broad in the middle, and supported upon a petiole 1½ to 2 inches long. The flowers are destitute of a corolla, but have a pale-yellow five-cut calyx, spotted with purple, the segments spreading like the spokes of a wheel. Its fruit is of about the size of a citron, and contains five seeds, of about the size of horse chestnuts, more or less globular, of a fleshy consistence, externally of a reddish-violet color, and internally of a dark-violet tint, when freshly cut. The seeds are called Cola, or Kola, or Guru nuts, sometimes also erroneously cacao nuts.

Cola acuminata R. Br.

The tree which bears these celebrated nuts is a native of tropical Africa, particularly toward the western shore, and now that this almost unknown country is being opened up to commercial enterprise, these valuable nuts will probably receive the attention they merit as an article of trade.

In the words of Dr. Daniell who resided for

*Compiled from: Thomas Christy, *New Commercial Plants*, No. 3, 8vo, Lond., 1880, and other sources. The illustration is from Christy, after Beauvois.

† In: Bennet, *Plant. Javan. rar.*, 237. See also Olivier, *Fl. trop. Afr.*, I., 221. H. Baillon in *Adansonia*, X., 169.—Synonyms: *Sterculia acuminata* P. Beauvois in *Flore d'Oware et de Benin*, I., tab. 24. *Sterculia nitida* Ventenat in *Malmaison*, II., 91. *Sterc. verticillata* Schumacher et Thonning, in *Beskriv.*, etc., 240. *Siphoniopsis monoica* Karsten in *Plant. Columbianæ*, 139, tab. 69.—Compare also *Journ. de Pharm.*, 1832, 702. *Pharm. Centralblatt*, 1833, 123.

some time in West Africa, "It would be difficult to find any product which occupies such an exalted position in the social and dietetic economy of the negro tribes and which constitutes such an important article of commerce in Soudan, as the Cola Nut."

With the majority of the aboriginal races populating the vast extent of territory between Senegambia to the north, and Angola to the south of the Equator, Cola nuts have from time immemorial been held to be of inestimable value, and their virtues have been so highly prized that they have become an indispensable and permanent luxury.

Cola nuts appear to have first been mentioned by Philippus Pigafetta,* who wrote a description of the Kingdom of Congo. Clusius † received some of these nuts from Jacob Garet, of London, in 1591, and subsequently also from Tobias Roellius, a physician of Magdeburg, whose description he quotes. According to this: "*Coles* is a fruit which, when dried, is very hard and solid, so that it seems singular, what is said of it, namely, that it should be of benefit for digestion, and to render any kind of drink palatable by first chewing them. These fruits are always used by the inhabitants of Africa about Cape Verd when fasting, and they are able to abstain from food for a whole day, after having eaten three or four."

Within the last few centuries, however, their use has been still more extensively diffused, and to such a degree as to cause a large commercial intercourse to spring up between the coast districts and the regions of Central Africa, or Soudan. This profitable trade has been carried by Pagan and Mahommedan merchants (the latter especially) into the more remote countries beyond the Sahara, so that for many years these valuable commodities have been offered for sale in the markets of Fez, Tripoli, and other local depots on the shores of the Mediterranean. So highly are the nuts valued, that the presentation of a few, or even one, is esteemed a high compliment, and when given by a chief to a white trader, conveys an assurance of welcome, friendship, and protection; and, where the nuts are not indigenous, no business can be transacted without a few of them being previously eaten. So highly are they appreciated that formerly no marriage gift of the bridegroom to the father would be deemed acceptable for the purchase of his daughter, unless it comprised a considerable amount of the Cola seeds. The fetishman or necromancer relies especially upon feeding the "Spirit" with the Cola nut to raise it before the unfortunate votary as propitiatory offering to the malign god of the earth, to avoid sickness, misfortune, or to insure happiness, or a bountiful harvest. On the departure of a guest, the host feels bound to bestow a few Cola nuts upon him. These are only a few of the ceremonial uses of the Cola nut which appear to have arisen from the recognition of its valuable properties.

In Sierra Leone they have formerly been used as money, the same as cowries, and are still used as a standard medium of barter in many districts.

Although slightly bitter and astringent, strangers quickly become accustomed to the taste, and the habit of chewing the nuts soon becomes an imperative necessity—just as much as drinking tea and coffee in this country, or as the use of maté and coca to the natives of South America. This has been the case with the Portuguese, Dutch, and English, who have used them. As an example of how highly they are prized, it is stated that at Fezzan the seeds sell, in their fresh state, at the large sum of a dollar for four seeds, and that they are offered to visitors as a substitute for coffee, being handed round on salvers. In conjunction with gold dust and salt, these nuts form the staple commodity of Soudan. When roasted they constitute what has been called "Soudan Coffee."* Their use is said to support the strength, allay inordinate appetite, assuage thirst, and promote digestion, and to render those that use them capable of prolonged fatigue. It is asserted that to those who chew and eat Cola nuts, all food and drink, and even brackish water, have a pleasant taste. At the same time they have this great advantage over the other great Eastern masticatory, viz., arecanut, that they do not stain the teeth, but rather aid in rendering them white.

Their effect upon the system must be considered to be of a bracing character, for Dr. Daniell states that, when suffering from a peculiar form of diarrhœa to which Europeans are subject, and which arises from relaxation of the mucous membrane of the intestines, he was relieved by drinking a decoction of the fresh seeds. The valuable properties of these nuts are doubtlessly due in part to the fact that they contain the same chemical principle as tea and coffee, of which (theine) they contain more than two per cent.†

* *Descriptio Regni Congiani*, II., 1; quoted also by *Bauhin, Pinax*, p. 507.

† *Exoticorum* Lib. III., cap. 7, p. 65 (fol., Antwerp, 1605).

* Rosenthal, *Synopsis Plant. Diaph.*, 723.

† Cola Nuts were analyzed in 1865 by Prof. J. Attfield. He found them to contain: water, 13.65; cellulose and coloring matter, 20.0; starch, 42.5; volatile oil and fat, 1.52; albumen, 6.33; gum, sugar, and other organic matter, 10.67; inorganic matter, 3.2, and *theine* or *caffeine*, 2.13. Cola, therefore, in the dry state, somewhat resembles coffee, but differs in not containing tannin, in possessing but little fatty matter, and in the presence of much starch. Indeed, so far as its analysis indicates, if the fresh nut did not possess peculiar virtues, which apparently are lost on drying, it might be advantageously substituted for coffee. For when made up into a beverage it is thick and mucilaginous like cacao, but is tasteless and odorless; nor is it improved in these respects by roasting.—*Pharm. Journ. and Trans.* [2], VI., 457.

It is well-known, however, that coffee owes some of its valuable properties to a small quantity of a volatile oil. Cola nuts also contain a peculiar aromatic volatile oil, to which, perhaps, their beneficial effects are in some measure to be attributed. The power which they possess of clearing muddy water, and rendering it sweet, is, perhaps, due to the albuminous matter of the seed producing a kind of mucilage, which carries down particles of impurity with it. Besides their dietetic and medicinal values, they also yield a yellow dye.

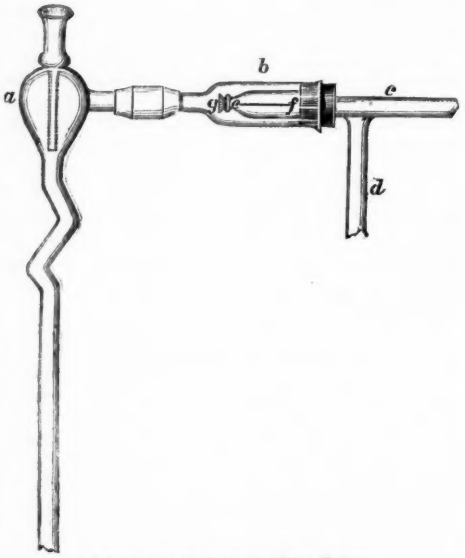
The tree flourishes well by the sea coast, and is worthy of the attention of those who intend trading with the interior of Africa, where it does not grow. By the negro it is preferred to tea or coffee, so that where it is attainable, the coffee which grows wild, and is also cultivated for sale, is not used by the natives. To what this preference is due it is difficult to say, since the nuts have only been chemically examined in the dry state, in which condition they lose their bitterness. It is certain, however, that they have a beneficial action on the stomach and liver, a small piece being commonly chewed before meals to promote digestion, and their continual use prevents those attacks of constitutional despondency which liver disease often induces, and to which the negroes are peculiarly liable.

Dr. Daniell alludes to an instance of this kind, in which the use of the Cola nut put a stop to an epidemic of suicidal mania, which threatened at one time to depopulate the estate on which it occurred.

The natives prefer Cola nuts in the fresh state, and they can preserve them for months, by wrapping them in a peculiar kind of leaf, which is kept moist. Those which Mr. Christy has recently received, arrived in England as fresh as if they had just been gathered. He sent some to Kew, and planted the remainder himself. Some had been sent to him packed in loam, and some in leaves, and he thinks that the latter plan is the best.

A Simple Check-Valve for Filter-Pumps.

It sometimes happens, during the use of a filter-pump, that the supply of water is irregular or temporarily interrupted, in consequence of which a portion of the water is sucked backwards in the direction of the exhausted vessel. The water may be arrested before it actually arrives there by the interposition of an empty flask, but it may be much more effectually arrested by a good check-valve. Metallic check-valves, when perfectly clean from grease or rust, will last for a long time, but they nevertheless often get out of order and then remain a constant source of annoyance. In place of these, a very simple arrangement has been substituted by Dr. Pauly, the assistant of Prof. R. Otto, in Braunschweig. It is the application of the same principle which is illustrated in this number, p. 37. The vessel which is to be exhausted, or a separate vessel connected with the former, is made to receive, through a well-fitting cork, the leg *d* of the three-way glass-tube *c*. One of its other ends passes through a tight-fitting rubber-stopper, and is covered, inside of the tube *b*, by a piece of rubber-tubing tied at *g*. A clean slit with a sharp knife is made in a longitudinal direction in the rubber, and a small piece of a glass-rod inserted into the interior, so as not to fill completely the bore of the tube. The slit will permit the passage of air in the direction from the vessel to the pump, but not vice versa. The filter-pump shown in the apparatus is one made entirely of glass by Geissler, of Bonn.



Geissler's Check-Valve for Filter Pumps.

The Assay of Reduced Iron.

From the results of a considerable number of experiments made by O. Wilner in the Pharmaceutical Institute at Stockholm,* on the most practical method of assaying reduced iron, the following points appear to be established:

1. The quantity of metallic iron in reduced iron can be exactly determined by treatment with a solution of mercuric chloride and titration with potassium permanganate.

2. On treating metallic iron, under the application of a gentle heat, with an excess of a concentrated solution or mercuric chloride, the metallic iron present goes into solution as ferrous chloride, and metallic mercury and mercurous chloride (calomel) are precipitated. Any ferrous or ferric oxide present remain undis-

* Published in full in the *Farmaceutisk Tidskrift*, Aug., 1880.

solved, and, therefore, do not interfere with the assay of iron.

3. The quantity of ferrous oxide present in the sample may be determined by adding some hydrochloric acid, digesting the mixture in a closed flask until the finely-divided oxide is dissolved, and titrating with permanganate solution.

4. The ferric chloride formed at the same time does not affect the precipitate of metallic mercury and of mercurous chloride; nor does it in any manner interfere with the assay.

5. The supposition that reduced iron is a mixture of metallic iron with ferroso-ferric oxide (Flückiger), upon which is based a method of assay by converting it into ferric oxide and weighing the latter, is not borne out by facts; on the contrary, reduced iron is a mixture of metallic iron, with ferric and ferrous oxide in varying proportions.

Three commercial samples of reduced iron were found to have the following composition:

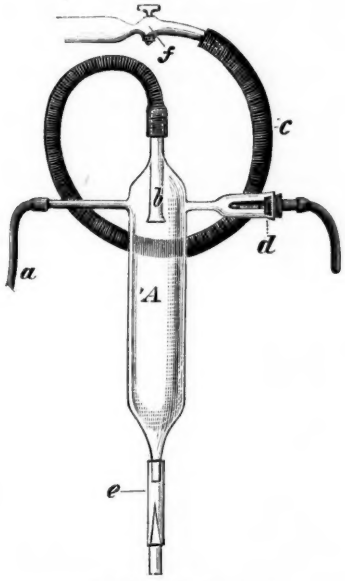
	1	2	3
Fe	74.88%	21.35%	34.44%
FeO	11.58	12.59	60.38
Fe_2O_3	11.07	65.41	2.16
Impurities and loss	2.47	0.65	3.02

All three contained small quantities of substances insoluble in hydrochloric acid, such as carbon, silica, etc.—*Pharm. Zeit.*, No. 93.

A New Form of Filter Pump.

THERE are two forms of filter pump in use in laboratories at present, the Bunsen pump and the pulse pump. Both are worked by water; the Bunsen pump requires a fall of more than thirty feet to give a fairly good vacuum, and the pulse pump can only be used with water delivered under high pressure. It must very often happen that neither a fall of thirty feet nor a supply of water at high pressure can be procured, and yet a filter pump may be desired. Under these circumstances, the instrument figured opposite may be used with good effect. It consists of a glass tube *A*, with which four other tubes communicate as shown. The tube *a* is connected to a flask, from which steam issues at atmospheric pressure, and the tube *b* is connected to the water supply by means of a piece of caoutchouc tubing *c*, about two feet long. At *d* there is another tube, and between this and the central tube *A* is a Bunsen's valve, opening into *A*. At *e* there is another Bunsen's valve opening into the external air. The action of the pump is explained thus: The tube *A* being full of air, a current of steam enters through *a*, and expels the air through the valve *e*; the tap *f* is all the time open to such an extent that a small stream of water would flow through it; or a fall in frequent drops, if the steam-current were absent. The steam-current entering *A* meets the water in *b* and forces it backwards, and at the same time the caoutchouc tubing swells slightly under the influence of the pressure. During about one-third of a second the current of steam continues, and the water-current is arrested; then suddenly the water, which has been kept back and accumulated, enters into the space containing the steam; the latter is instantly condensed, a sharp convulsion takes place, and air is sucked through the valve *D*. The cycle of actions then recommences, the steam drives out the air, the inrush of water is repeated, and air again passes into *A* through the valve *d*.

While a pump of this kind was working satisfactorily, and producing a vacuum of twenty-two inches of mercury, the following observations were made: The pulsations took place every



Bayley's Filter-Pump.

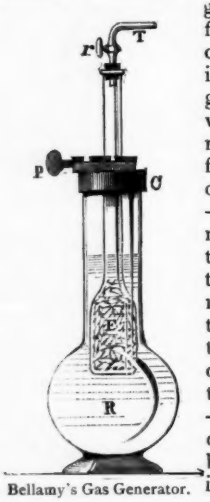
second; through the valve *e*, steam, mixed with air, passed for half a second, followed by hot water, for the same period: the latter was delivered at a temperature of 55 or 60° C. to the extent of about 150 cc. per minute. The pump working in this manner cannot, of course, yield a full vacuum, because the pressure of aqueous vapor, at a temperature of 60° C., is about six inches of mercury; and it is manifest that the valve *d* will not open unless the pressure in the receiver is greater than this. However, it is quite possible that in the early stage of condensation the temperature in the interior is less than the temperature at which the water is expelled, and of course a better effect may be obtained by using more water. The pump, acting as described, produced a considerable vacuum in a forty-ounce bottle in a few minutes.

I have used a slight modification of the Bunsen valve for this and other purposes. The arrangement is shown at *e;* the rod which closes the end of the caoutchouc tube forming the valve is drawn out, and lies under the slit. This prevents the collapse and failure of the valve.

This pump could, no doubt, be fitted up for use, either as a Bunsen pump, or as a steam pump, or as the two combined. By a simple arrangement it can be made to exhaust, to blow air, and to deliver boiling water at the same time. The boiling water obtained, is the water flowing from the pump subsequently mixed with the excess of steam. The water in the flask boils at a small fraction above the ordinary pressure, the excess being required to open the exit valve.—THOMAS BAYLEY in the *Chem. News*, Dec. 10th.

Apparatus for Generating Gases.*

TAKE a long-necked, pear-shaped assayer's flask, *F* (see cut), blow a small hole into its bottom, and introduce into it the solid substance, in suitable pieces, by means of which gas is to be generated: zinc for hydrogen, marble for carbonic acid, sulphide of iron for sulphuretted hydrogen, etc. Then select a wide-mouth flask, with long neck, and provided with a foot—such as are used for constructing galvanic cells—fit a good cork into its neck, and through a hole in the cork pass the neck of the other flask *F*, which must be of such a diameter that it will pass through the neck of the other without touching its sides. Introduce the requisite liquid—dilute acid—into the outer flask *R*, insert the cork bearing the flask *F*, and into the neck of the latter fit a small delivery tube, bent at right angles, and provided with a stock-cock. On top of the cork, over *C*, a pinch-cock is attached, to hold the neck of the inner flask at whatever height it is desired. As soon as *F* is depressed into the liquid (acid), gas will be generated; and on raising it out of the liquid, the generation of gas will cease, while the product of the reaction, from the acid and solid in *F*, will flow out from the small orifice at the bottom. It can deliver gas at a considerable pressure, and is always ready for use.



Bellamy's Gas Generator.

*Abstract from a paper by Mr. Felix Bellamy, in *Jour. de Pharm. et de Chim.*, Sept., 1880, 210.

[ORIGINAL COMMUNICATION.]

ON CITRATE OF CAFFEINE.

BY J. U. LLOYD.*

ACCEPTING the fact that caffeine is soluble in nine (9) parts of chloroform, and that citric acid is practically insoluble in chloroform, I argued that, if the results of my experiments be a mixture of citric acid and caffeine, chloroform should separate the caffeine, leaving the citric acid. That if a definite citrate of caffeine be formed, it might or might not dissolve in chloroform, or, that chloroform might *possibly* decompose it.

Result.—All endeavors to make citric acid and caffeine unite from aqueous or alcoholic solutions were failures. In all cases the chloroform dissolved the caffeine from the residue, leaving the citric acid.

Attempts to form a citrate of caffeine by double decomposition of barium citrate and solution of caffeine in water acidulated with sulphuric acid were failures.

Citric acid and caffeine in equivalent amounts refused to unite if triturated with chloroform, the caffeine dissolving alone. Then I examined a salt labelled citrate of caffeine, and sold upon the market as such. This was granular and semi-crystalline. It yielded one-third its weight when triturated successively with two portions of chloroform, fifteen parts each. This chloroform upon filtration and evaporation gave mostly pure caffeine. The residue, insoluble in chloroform, was mixed with solution of sodium carbonate, when effervescence followed, and a thick magma of feathery crystals resulted. This magma was agitated with chloroform: the crystals at once *dissolved;* the chloroform solution contained caffeine, the aqueous solution contained *sodium citrate.* Other experiments supported the above, and I could not doubt but the article under consideration contained one-half its weight of citrate of caffeine, the remainder being citric acid and caffeine. Upon dissolving the original salt in water, decomposition ensued, and subsequent evaporation gave simply mixtures of caffeine and citric acid. Thus I was led to conclude that the preparation could not have been made by aqueous solutions of the alkaloid and acid. Then I experimented with various solvents, and found that to make the caffeine unite with the acid, a solution must be used that exerted a solvent action nearly alike upon both the caffeine and the citric acid.† This solvent is best: chloroform, 1 part;

*This subject has been kindly investigated by Prof. Lloyd at the request of one of the editors of this paper. The existence of a citrate of caffeine or of any other true salt of caffeine with weak acids has been once believed to be possible, but very strong arguments have at various times been brought forward to prove their non-existence, and nearly all authorities at present take the latter view. The results of Mr. Lloyd's investigations, briefly detailed below, appear to throw a new light on this subject.—ED. N. R.

†The conclusion is: Caffeine will not unite with citric acid in presence of any solvent that dissolves citric acid

alcohol, s. g. 0.835, one-half part. The mode of procedure as follows:

Formula.—Dissolve thirty grains of caffeine in one fluid ounce of chloroform and mix this with a solution of thirty grains of crystallized citric acid in half an ounce of alcohol. Filter if necessary, and evaporate the filtrate in an evaporating basin over a water-bath until the residue is of a syrupy consistence. Remove the dish, then cool to 50° F., rubbing the contents of the dish with a spatula, and continue until a dry powder results. This is mostly citrate of caffeine, but free citric acid and free caffeine are undoubtedly present to some extent.

Remarks.—As thus prepared, citrate of caffeine is a semi-crystalline, granular powder. It is permanent in the air and soluble in a mixture of alcohol, one part; chloroform, two parts. It decomposes when mixed with cold water, first dissolving. If the proportions be such that the water cannot hold the caffeine in solution, this substance separates in feathery crystals. Alcohol, s. g. 0.835 and 0.805, dissolve it with decomposition and deposition of caffeine crystals if there be an excess of caffeine. It is practically insoluble in carbon disulphide and cold chloroform, although chloroform will extract any free caffeine that may be present. It is necessary, in preparing it, that the evaporating basin be removed from the heat and then cooled. The subsequent rubbing with the spatula favors combination. In one instance, the basin was permitted to remain thirty-six hours quiet and in a cool location, with scarce an appearance of crystallization, but as soon as the syrupy liquid was stirred it solidified into a dry crystalline mass. [This is sometimes the case with berberine, and in this case, when crystallization takes place, it is with elimination of much heat.]

Experiments were made with the object of ascertaining whether, if the proportion of caffeine be increased, all of the citric acid could not be made to enter into combination. As yet this point is open. The indications, however, are that such is *not* the case, and that at a certain stage combination ceases, both free acid and caffeine remaining. [Perhaps this may be likened to the preparation of sulpho-carbolic acid, in which a certain amount of each acid must always remain free.]

Solutions (separate) of caffeine and of citrate of caffeine in mixtures of chloroform and alcohol were sent to Prof. Wm. L. Dudley for microscopic examination. He kindly made the investigations and reported two classes of crystals. If the slides be moistened with chloroform, the caffeine disappears at once, the citrate of caffeine remains.

From the results of my investigations I am led to report that:

freely and caffeine imperfectly. Citrate of caffeine is decomposed by solvents that dissolve citric acid freely and caffeine to a less extent.

Citrate of caffeine is a definite compound. It is decomposed by solvents which dissolve citric acid readily and caffeine sparingly. It may be easily made by the process inclosed, but that it is contaminated with both free caffeine and free citric acid.*

Apparatus for Local Mercurial Fumigation and Application of Powders.

MR. CHARLES ROBERTS describes, in the *British Medical Journal* of Dec. 4th, 1880, an apparatus for dusting powders over localized surfaces, which is essentially that suggested some years ago by Dr. A. H. Smith, of this city, but with slight modifications. His first apparatus consisted of a wide-mouthed glass flask; through the cork or which were fitted two glass tubes—one drawn out to a nozzle and the other provided with a double-valved elastic ball. Calomel having been placed in the flask, was sublimed by the aid of a spirit-lamp. This was also used for the local use of sulphur vapor. A still simpler form of apparatus (Fig. 2) was found to serve the purpose when calomel was used, a salt-mouth vial taking the place of the flask, and the induction tube being carried nearly to the bottom of the vial. A handy modification of this apparatus, as it can be made in vulcanite, is shown in Fig. 3, this arrangement permitting the tubes to be united in one stopper, and thus screwed snugly into an opening in the cork of the bottle. [We have used an instrument like this for a number of months as a means for applying iodoform to chancroidal ulcers, with excellent success, the difference being that, instead of an elastic ball, a hard-rubber mouth-piece is attached to the induction tube and the breath is used instead of the bulb.—ED. N. R.]

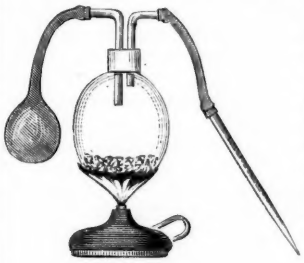


FIG. 1.

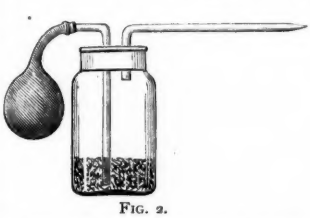


FIG. 2.

FIG. 3.

* Prof. Lloyd has sent us specimens of caffeine (pure), citrate of caffeine, made according to his process, and solution of citrate of caffeine, for microscopic examination. One vial containing the latter has a few solid crystals deposited on its inside, which differ from those characteristic of citric acid and caffeine, and are doubtlessly the above-mentioned salt.—ED. N. R.

[Original Communication.]

FERRIC SUCCINATE.

BY PROF. WM. T. WENZELL.*

Since succinic acid in combination with the ferric radical has recently been introduced by the medical profession as a remedy for the relief of jaundice, resulting from obstruction of the biliary duct by calculi, and with apparent success, a demand for a preparation combining efficiency and elegance has arisen. The originator of this medicine recommends the use of the hydrated succinate of iron as the preparation from which he has obtained such good results in the treatment of the affection referred to. But the preparation is unsightly, and anything but elegant as a pharmaceutical product.

Ferric succinate, in hydrated state or dried, presents a cinnamon-brown amorphous substance, quite insoluble in water. It is readily prepared by adding to a solution in water of an alkaline succinate, a solution of ferric sulphate, as long as a precipitate is obtained. In this reaction, contrary to the law first enunciated by the Saxon chemist Wenzell, a half century ago: "when two neutral salts are mixed together in solution, and a decomposition is effected, the products of the decomposition would be also neutral salts," a basic ferric succinate is produced instead of a neutral succinate—a portion of the succinic acid being liberated and remains in solution. The reaction takes place between one molecule of ferric sulphate and three molecules of the neutral or normal ammonium succinate, and with the assimilation of two molecules of water:

$$\underset{\text{1 mol. ferric sulphate}}{Fe_2(SO_4)_3} + \underset{\text{3 mol. ammon. succin.}}{3(NH_4)_2C_4H_4O_4} + 2H_2O =$$

$$= 3(NH_4)_2SO_4 + \underset{\text{Basic ferric succin. (hydrated.)}}{Fe_2O_3H_2(C_4H_4O_4)_2} + \underset{\text{Succinic acid.}}{H_2C_4H_4O_4}.$$

Hydrated ferric succinate occurs in the form of an amorphous precipitate, containing one molecule of water, of which it is deprived on drying, and converted in the basic salt

$$Fe_2O(C_4H_4O_4)_2.$$

The hydrated salt is insoluble in a cold solution of succinic acid or ammonium succinate, more soluble in boiling solutions, from which it separates slowly on cooling. It is more soluble in ammonium citrate, even at ordinary temperatures.

A solution of ferric succinate in ammonium citrate is quite permanent, and can be mixed with succinic acid and ammonia without decomposition. An excess of ammonia merely deepens the color. The solution, evaporated at a temperature not exceeding 130° F., solidifies, on cooling and standing for a time, into a crystalline mass.

By experimental synthesis, working with exact molecular weights, it was found that three molecules of ammonium citrate were required to dissolve one molecule of the precipitated ferric succinate, and from these data the following composition of the double salt of ferric succinate and ammonium citrate has been deduced: $Fe_2O(C_4H_4O_4)_2 . 3(NH_4)_2C_6H_5O_7$, and from this molecular formula a working formula for its preparation has been calculated:

Liquor Ferri et Ammonii Succinatis (Solution of Succinate of Iron and Ammonium).—Dissolve 50 grains of succinic acid in 3 fluid ounces of water, neutralize nearly with ammonia and dilute to 6 fl. oz. Transfer the solution to an 8 oz. bottle, add half a fluid ounce of the officinal liquor ferri persulphatis and agitate well. Transfer the mixture to a filter and wash the precipitated ferric succinate thoroughly with distilled water. Next take 89 grains of citric acid, put it into a beaker, and add with stirring a sufficient quantity of water of ammonia until the acid is dissolved and the solution neutral.

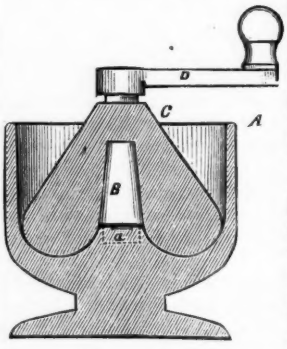
Finally, transfer the moist ferric succinate to a porcelain capsule, add the solution of ammonium citrate and dissolve, assisted by a gentle heat.

This solution, when diluted to measure 6 fluid ounces, will contain to the fluid drachm two grains of the ferric succinate, $Fe_2O(C_4H_4O_4)_2$, or 5 grains of the double salt.

* Read before the California Pharmaceutical Society and California College of Pharmacy, Oct. 13th, 1880.

A New Mortar.*

The adjoining illustration represents a mortar which is intended by the patentee to facilitate the amalgamation of ores, but which might well serve certain pharmaceutical and other purposes. It consists of a mortar, the bottom of which has an upwardly-projecting central shoulder or swell, having a socket for the reception of the shouldered lower end of a removable shaft, which is journaled in a central opening in the muller. The latter is made to revolve by means of a crank, as shown, or by any other suitable contrivance. The post B, keeping the muller revolving upon a true centre, secures a uniform wearing surface and renders the rubbing process more complete and rapid than is the case with an ordinary pestle.



* Patent No. 235,505, granted Dec. 14th, 1880, to Joshua S. Buck, of Oakland, Cal.

On the Action of Pepsin upon Animal and Vegetable Articles of Food.*

As the time is past during which it was possible to enunciate, *ex cathedra*, as infallible dogmas, one-sided theories or the teachings of the ancients, and though we have the advantage of the aid of numerous experiments and investigations: it is a matter of risk to pronounce on the digestibility of any one article of food. This is quite natural, and is owing to the numerous difficulties encountered in attempting to solve the question; for it is not merely necessary to have an intimate acquaintance with the nature and composition of the kind of food to be experimented with, or to know the different changes which it undergoes in its contact with the various secretions of the body, but it is also requisite to have a knowledge of the nature of the process of digestion itself, as well as the conditions under which it takes place, before any correct conclusion can be drawn as to the cause of discrepancy between various experiments.

Since the number of factors which must be considered in studying the digestibility of any substance is so great, it is self-evident that this question cannot be finally decided by an artificial digestion in a flask, as it is impossible in this to even proximately approach the natural conditions in the living organism. Still such experiments have a relative value, because, if performed under like circumstances, they at least permit us to draw a comparison on the digestibility of various foods belonging to one and the same group. To furnish a few facts towards the solution of this question is the object of the present paper.

Without entering, therefore, into the theories regarding digestion in general, or regarding pepsin and the formation of peptones, the author at once proceeds to the practical part of his investigations. His object was to act upon different kinds of food under as nearly identical positions as possible, with one and the same kind of pepsin. The pepsin used was from the factory of Friedrich Witte in Rostock, in form of a liquid (Pepsin-Essence) of a clear yellowish-brown color, of a vinous odor, and a slightly acid, astringent taste. According to the statement of the manufacturer, 1 cc. of the liquid (said to contain 0.06 gm. of pure pepsin), is able to dissolve 400 gm. of moist fibrin, in the presence of 1 liter of water, containing 6 cc. of hydrochloric acid, and at a temperature of 50° C.

Since it is known that the rapidity and extent of digestion depends upon the degree of concentration of the digestive mixture (that is, upon the amount of water and acid present), and also upon the quantity of the digestive principle, and the prevailing temperature, it is necessary to bring all these factors into correct proportion. This proportion had been arrived at by experiments made at a previous period in the pharmaceutical laboratory of the University of Dorpat, so that the author was not compelled to repeat them. The author's experiments were made with a quantity of food, corresponding to 0.75 gm. of *dry* substance, 100 cc. of distilled water and 1 cc. of essence of pepsin, which latter quantity is more than required; but an excess was thought to be indicated, as this occurs also in natural digestion. Besides, 2 cc. of hydrochloric acid containing 13% of HCl were added. The temperature employed was 40° C. (= 104° F.), instead of 50° C. (= 122° F.), as being nearer to the temperature of the living body. The substances experimented with were minutely subdivided, by cutting, rasping or pounding, which was often very tedious and difficult. The comminuted substance was then intimately mixed and transferred to a well-closed glass bottle to prevent loss of moisture. A sample was removed, its percentage of water determined, and on the basis of the result, a quantity corresponding to 0.75 gm. of *dry* substance was taken. The artificial digestion was started in the early morning by weighing the required quantity, triturating it thoroughly, in a small mortar, with a little distilled water, adding the remainder of the distilled water required, once more carefully stirring and then pouring into a flask. The 2 cc. of 13% hydrochloric and 1 cc. of essence of pepsin were then added, the whole agitated and put on a water-bath kept at a constant temperature of 40° C.

In case the experiment could not be completed in one day, the operation was interrupted by exposing the mixture, during the night, to a temperature of about 12° C. (= 53.6° F.), at which, according to Schiff,* digestion ceases, or is at all events reduced to a minimum.†

In order to insure as constant and intimate a contact of the digestive principle with the substance experimented upon, the mixture was shaken every 10 minutes.

Though the amount of material experimented with always corresponded to 0.75 gm. of dry substance, yet it is evident that the percentage of albuminoids (which alone are digested by pepsin) differed considerably in different substances. But this difference was found not to introduce a source of error, as might be expected; for the author's experiments upon pork-fat, cheese, wheat-bread, and cacao show that even if the quantity of substance be doubled or trebled, no retardation of the digestion takes place, in presence of the same quantity of pepsin.

The end of the experiment was determined by the *degree of opalescence* of the liquid, by the rate of solution of the digested object or accord-

*Abstract of the Inaugural Dissertation of Friedrich Kessler, M.D., of Dorpat, Russia. Communicated by Prof. G. Dragendorff.

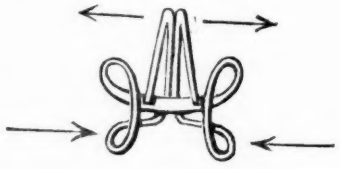
*Leç. sur la digestion, II., 17.

†Wittich, in *Arch. f. d. ges. Phys.* (Pflüger) V., 450.

ing to the character of the remaining residue, and finally by Wittich's* reaction of peptones with alkalies and sulphate of copper. These latter had, already before Wittich, been known to give a blue color with albuminoids; but Wittich found that they gave a wine-red color with peptone solutions, though he did not know at the time whether this color was not owing solely to pepsin. In a later paper, Wittich† declares positively that a glycerin extract of the mucous membrane of the stomach (prepared by him with great care, and which undoubtedly contained pepsin) does *not* assume this red color on the addition of an alkali and sulphate of copper, but that this appears at once, if a few drops of the same glycerin extract containing fibrin be added, and that the color deepens in proportion to the amount of peptone formed. The author confirms Wittich's statement that a good pepsin preparation does not give this reaction. Although the essence of pepsin used by the author did give this reaction, which is owing to a slight contamination with peptones, yet the value of his experiments is not infringed thereby, as the color did not make its appearance in the degree of dilution (1 : 100) selected by the author until new peptones were formed, and the chief criterion relied on by the author was the *change* of color from blue to red. The reaction was made by adding to the liquid to be tested a little solution of potassa, and then a few drops of a very dilute (1 in 250 or 300) solution of sulphate of copper. This reaction is of great value in experiments on digestion, particularly for this reason, that it not only indicates the complete peptonization of the dissolved albumen, but also because it affords, by the gradual change of the color from blue to red, a chance for arranging a color scale, the different degrees of which correspond to a certain condition of the digested substances. The author selected six different stages, corresponding to different shades of color, though he himself states that they cannot be in every case described with perfect exactness: 1. *Beginning of Reaction*, indicated by a blue or bluish tint, without trace of red. 2. *Beginning of Peptonization*, blue with a light-reddish hue. 3. *Decided Peptonization*, and 4. *Peptonization in full action*, both of which are characterized by a gradually progressing increase of the red tint. 5. *Nearly Complete Peptonization*, in which the blue has almost disappeared, the red predominating. 6. *Complete Peptonization*, the color being a pure red (pale-red) without a trace of blue. The reaction was employed by the author, every half-hour, at the beginning of the experiment, afterwards every hour, and towards the end again every half-hour. Occasionally it was found that a reaction which occupied a higher place in the scale, at the next trial was found to have gone back a step, which was evidently owing to the fact that a larger quantity of albumen had shortly before gone into solution, without having as yet been changed to peptone. In most cases the reddish tint made its appearance in from 30 to 60 minutes.

Since the color reaction alone is not sufficient to determine the end of the peptonization, because it can only show the condition of the albumen gone in solution, the author, in addition, employed the degree of opalescence as a criterion. Nothing definite or general can be said about this, as it varies greatly with different substances. Finally, the quantity and condition of the residue were used as criteria, and the author establishes also here seven different classes, corresponding to residues amounting to the following percentages of the original substances: 1. *Trace of Residue*, 1–3% of the *dry* substance. 2. *Very slight*, 3–8%. 3. *Slight*, 8–12%. 4. *Moderate*, 12–18%. 5. *Medium*, 18–25%, 6. *Copious*, 25–35%. 7. *Very Copious*, 35% and over. Although many of the above determinations have to be made by judgment with the eye, yet the errors cannot be important, particularly as all determinations were made by the same person.

From the long list of articles of food examined by the author, as to *digestibility*, we select a few of the most important: Cheshire cheese, and raw fibrin from ox-blood took 1½ hours for complete digestion or peptonization. Raw milk, 2 hours. Rich cheese, 2½ hours. Smoked herring, 3 hours. Salt-herring, and raw pork-fat, 3½ hours. Roast chicken; sour milk, 4 hours. Smoked pork, 4½ hours. Broiled chicken, 5 hours. Roast veal or mutton, 5½ hours. Boiled veal or mutton; roast pork; raw white of egg, 6 hours. Raw, or strongly roasted or fried beef, 6½ hours. Slightly roasted beef; boiled pork, 7 hours. Boiled beef, 7½ hours. Hard or soft boiled white of egg; raw yolk; rye bread, 8 hours. Boiled corn-beef, 8½ hours. Oatmeal (gruel), 9 hours. Coarse wheat-flour, boiled, 10 hours. Hard or soft yolk of egg, 11 hours. Indian corn, boiled, 14 hours, etc.



A new Pinchcock.

THE accompanying illustration represents a pinchcock devised by Knies and H. v. Jüptner (*Chem. Centralbl.* (3), 11, 179. It has this advantage that it can be applied to any part of rubber-connections without requiring disconnection.—*Zeitschr. f. Anal. Chem.*, 1880, 477.

* *Königsberger Med. Jahrbücher*, II., 225.
† *Arch. f. die ges. Physiol.* (Pflüger), II., 195.

Renewal of the Bolivian Cinchona Forests.

THE following interesting account is taken from the annual report of the Consul of the Netherlands, at La Paz, in Bolivia.*

The greatest factor of progress upon the domain of agriculture in Bolivia is the renewal of the Bolivian Cinchona Forests, the first impulse to which, however, did not emanate from government, but from private individuals and land-owners in 1878. The continued high prices of bark, as well as the reports on the cultivation of cinchona in India, have at last aroused a spirit of speculation, which is at its fullest development on the banks of the Mapiri, in the province of Larecaya, Department of La Paz, where already some 400 to 500,000 new trees of a two years' growth may be found. In the province of Yungas, near Coroico Coripate, as well as on the river Casones, new plantations are springing up. An extensive valley, named Quinuni Valley, upon which great numbers of shoots and young trees are still found among the decayed stumps of old trees, has been purchased by private individuals, who propose to close it against access for a few years, so that the young trees may have a chance to grow.

The plantations are of two kinds, either upon private grounds (*haciendas*), or upon government grounds (*terrenos baldios*). All the districts named above, with the exception of the Quinuni Valley and the land along the rivers Mapiri and Casones, have been owned by private persons and have always been divided into *haciendas*, the principal products of which were cacao, coffee, coca, sugar-cane, bananas, etc. The soil was cultivated from the foot of the mountains up to about three-fourths of their height, while the cinchona tree was found in the forests crowning the summits or in mountain dells or valleys (*quebradas*).

These sections of country, which have been under cultivation for generations, may properly be reckoned as sub-tropical. The cinchona trees found there were the first which were felled in former times, as they were nearest to the city of La Paz; later on, when the bark became more rare and dear, the bark-gatherers penetrated to the more tropical and interior portions of the country, as well as in the uncultivated government districts. But even here the trees have almost disappeared. It is well known how roughly the bark used to be handled. Trees were cut down to within one or two feet of the ground, the branches—the bark of which was then not yet known to be richer in alkaloids than the bark of the tree itself—were cut off and left, as worthless, upon the ground. The stem of the tree alone was stripped of its bark, and even this was only taken off on the upper surface; for, if the tree was too heavy to be rolled over, it was left as it fell. Such felled trees, which still possess considerable value, if they have not yet rotted, are not infrequently met with, even at the present time, in the forests. The stumps left in the ground, after a while, throw out new shoots, and from these shoots and young trees there was obtained, for some time back, a quilled sort of bark which is much richer in alkaloid than the flat bark taken from old stems, which fact, however, was for a long time only known to manufacturers of quinine. But as the price of bark in the course of this year has risen to 225 dollars per hundredweight, the remaining stumps were to some extent dug out, together with the roots, in order to increase the amount of bark. Only low prices however, could be obtained for this kind of bark and the undertaking was again given up, so that a stop was put to this devastation.

Replanting on private grounds is done at a comparatively trifling expense. For over a hundred years there has existed a fixed contract between the landed proprietors of the province Yungas and their Indian tenants (*peones colones*), according to the following norm: Each family receive a lot of ground with dwelling, for their own use, and binds itself to perform field labor for the hacienda, during 2, 3, or 4 days in the week, at wages amounting, per day, to 4–5 reals (= 28–36 cents) for men, and 2½–3 reals (= 16–21 cents) for women and children. The rest of the week the peon is at liberty to attend to his own fields. It only requires a few days in the year to clear the ground, necessary for a cinchona-plantation, from shrubs and trees, to transplant the young trees from the nurseries and to keep the ground clear from weeds, etc., during the first and second year. Afterwards, the trees may be left to themselves. Such a plantation entails, therefore, but a trifling expense, or none at all, upon the proprietor.

In the wild and uncultivated tracts of land along the Mapiri, however, such an undertaking requires more capital and labor. The ground must be bought from the state, for which purpose a petition (called *denuncia*, "claim") must first be sent in, containing a description of the territory, which is designated as *baldio* (ager vacans, or unclaimed ground), together with a list of witnesses who testify that the ground in question is not private property. After the witnesses have been heard, the state puts a price upon the land and it is sold at public auction, in which the claimant enjoys certain privileges and advantages before other purchasers. Generally there are no other bidders but the claimant. If the latter, however, happens to be a person without influence or protection, his claim is pigeon-holed or delayed. In the case of influential persons, lands are often valued at ridiculously low prices, and almost given away, as was done with the Quinuni Valley. The latter, which is about 59 miles (Engl.) long, was sold to private parties for the sum of 500 dollars, and another, still

* Quoted after *Die Natur*, 1880, No. 39.

larger domain on the Mapiri river, for 1,200 dollars.

The planting of such districts is contracted out to natives of the lower classes, who generally demand advances and sublet the real labor to Indians. The ground is usually covered by a dense forest, which is cut down in suitable sections; the stems, branches, shrubs, etc., are piled together, and, as soon as they have dried sufficiently, are set on fire. This operation is called *la rozada* ("razing"). During this time a nursery-plot, exposed to the free air, but situated in a shady place, is prepared, and the seed deposited therein. As soon as the young plants are about one foot high they are ready for transplantation. The "razed" district, called *rozadero*, is once more cleared of weeds, and the young plants put into the ground in distances of five to six feet. Between them are planted banana trees, which are intended to afford shade to the young trees during the first and second year. After this, the contractor sends his Indian workmen around occasionally, to weed out between the trees. From March to June is the best time to begin a plantation, as the rainy season is then over. One year after planting, the plantation is delivered over to the owner; all dead trees being taken out, and those which have retained vitality are counted. The contractor receives for each tree of one year's growth two reals or about fourteen cents. According to this rate the plantation at the Mapiri will have cost *about* as follows:

Ground	$1,200
300,000 plants, each at $0.14	42,000
Superintendent, buildings, etc.	4,400
Interest	4,800
Total,	$52,400

It is said that the bark may be cut already in the fourth year, but this statement is doubted by Dr. Hasskarl. The claims of the proprietors that they had already obtained 300 cwt. of quilled bark from trees planted only a short time before the beginning of the year 1878, is regarded by Hasskarl as an idle boast.

As soon as the contractor has delivered to the owner a portion of 20, 30, or 40,000 plants, the risk falls upon the latter, who must hereafter look after the soil and plants through his own hired agents. During the first and second year two dangers are liable to occur: either the plants may dry up during a drought or they may be attacked by ants. After the second year, they are not liable to be injured thereby. The drought which was common all over Bolivia during 1879 killed thousands of plants.

Whether the new Bolivian plantations, which certainly must be a source of some uneasiness to the planters on Java (and British India), will be managed with sufficient energy, will principally depend upon the value of bark during the next three or four years. Should this diminish, in consequence of an increased supply of Indian barks, or through other causes [possibly the discovery of artifical quinine, Ed. N. R.], the zeal will cool off and the old system of neglect and carelessness be resumed, particularly as the supply of labor in the province of Yungas is scarcely sufficient to cultivate the coca-plantations which yield a much quicker profit. Besides, the increasing means of the colonos and peons, in consequeuce of the high prices of coca, makes them gradually more independent of the land-owners. In addition to all this, there is a feeling of uncertainty as to the security of private property, especially that which is notoriously obtained by underhand and unfair means. Dr. Hasskarl, who is intimately acquainted with the condition of things, both in Bolivia and in Java, has no fear that this new enterprise will seriously injure the Dutch plantations in Java. A country in which life and property are secure, and peace and order go hand in hand with capital and legitimate enterprise, need not fear the competition of any other country where all these factors are wanting. And, indeed, Bolivia appears to have only one advantage over other countries in this respect, namely, that it is the native home of Cinchona, so that all theories and experiments regarding its planting and growth are unnecessary. It would be different, if this portion of Bolivia should also be annexed to Chili—as a consequence of the present war between the latter country—with Peru and Bolivia; the energetic measures of the Chilian government would certainly produce results which would have serious consequences for the Javanese (and British Indian) plantations.

The whole export of fine manufacturers' barks, from the port of Mollendo, in 1879, amounted still to 300–350,000 kilos, half of which came from the province of Caupolican, the most northern of Bolivia, where the extinction of the tree does not yet appear to have extended as far as in the province of Yungas.

Geographically considered, a portion of the Caupolican bark is not of Bolivian origin, but is derived from the adjoining Peruvian province of Carabaya. Peru intended to prevent this by a decree issued in 1879, forbidding the cutting of bark throughout the republic, which was perhaps intended to be a precursor of a new decree creating the gathering of cinchona bark an *estanco*, or state-monopoly. Subsequently recognizing, however, the uselessness of this law, it was superseded by another which again permitted the collection of the bark, but entailed upon every one engaged in the business the duty to plant annually at least ten new trees in the forest. It need hardly be mentioned that this requirement will probably remain a dead letter.

The most southern departments of Santa Cruz and Cochabamba furnish a large supply of false cinchona bark, which contains no quinine and which is useless for the manufacturer. But it is largely employed in Europe for the prepara-

tion of wine of cinchona. The supply of this kind of bark is as yet undiminished, although annually more than 200,000 kilos are exported, at an average value of $1.20 per kilo. The price of fine-quilled manufacturers' bark, during 1879, varied between $180 and $250, delivered on board at Mollendo.

Preparation of Pure Litmus Solution.

A PURE litmus solution, free from substances which interfere with the brilliancy of the tint and sharpness of reaction, may be prepared, according to M. Kretschmar, as follows: Reduce a convenient quantity of litmus, which should not be too small, to a fine powder, exhaust it with cold water, and evaporate the solution with fine, washed sand. During the evaporation add a sufficient quantity of hydrochloric acid, so that the liquid, after the escape of carbonic-acid gas, still appears bright-red. When the residue is dry, rub it to powder—which will be of a brownish-red color—wash it upon large, unplaited filters, first with hot, then with cold water, and dry it on the water-bath. The residue consists of sand, upon which is precipitated the true coloring matter of litmus, namely the azolitmin of Kane, which is almost completely insoluble in water free from alkaline reaction. The substances which have been removed by water, in the preceding treatment, accompany the litmus color in the solution and tincture, as ordinarily prepared, and diminish the sharpness of their reaction. To prepare a solution of litmus from the above powder, it is only necessary to wash it, upon a filter, with hot water containing a few drops of ammonia, whereby the coloring matter is dissolved. It only requires a few minutes to extract all the color. The filtrate is acidulated with a few drops of sulphuric acid, then again neutralized, and, in this condition, furnishes an indicator which leaves nothing to be desired, as regards sharpness of reaction and promptness of transition from one tint to another. If this solution is much diluted, and a few drops of sulphuric acid are added, the azolitmin is almost completely precipitated as a brownish-red sediment, while a small quantity of foreign bodies still remains in solution, and imparts to the latter a pale wine-red color. On dissolving the obtained precipitate with water containing a minute quantity of ammonia, a solution of extremely brilliant color is obtained.

Dr. E. Geissler, in *Pharm. Centralh.*, 1880, No. 35, points out that a superior litmus solution is obtained by boiling litmus, according to Mohr's directions, two or three times, with alcohol of 85% per cent, which dissolves a muddy-violet coloring matter, having the property of being rendered more red by acids, but not turned blue by alkalies. The residuary litmus yields to water a coloring matter which is pure blue in alkaline solution. Dr. Geissler adds that he has compared the litmus prepared by Mohr's process with the solution of azolitmin previously described, and that he has found the latter to be preferable. Mohr's process has, besides, the disadvantage that it consumes considerable quantities of alcohol.

Dropping-Bottles.

THE latest improvements in dropping-bottles and vials are shown in the adjoining figures. The first, invented by Franklin M. Dixon, of Philadelphia, Pa.,* consists of a bottle or vial, A, that has parallel sides throughout or in the neck only, within which a plunger B, through which a tube passes far enough downward to be immersed in the contents, while its upper end is curved so as to discharge the fluid clear of the bottle. This tube is placed eccentrically in the plunger, so that when not in use it can be turned into the position shown in Fig. 2, when its opening may be closed by pressure against the stopper or plunger. In order to use the bottle, the tube is first to be turned to the position shown in Fig. 1, when, pressure being made with a finger upon the plunger, the contents of the bottle is forced out in drops or in a stream, according to the force employed. To secure a more perfect fit, the plunger may have its lower end capped with a disc of rubber.

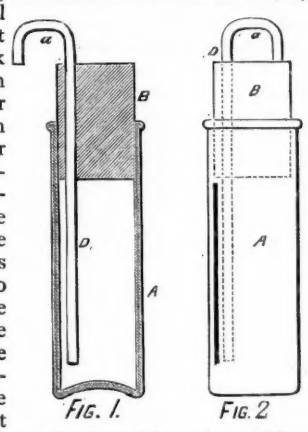


FIG. 1. FIG. 2

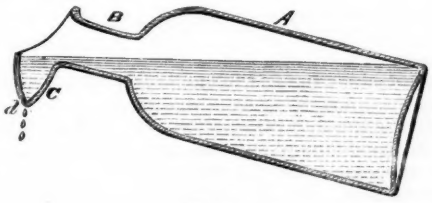


FIG. 3.

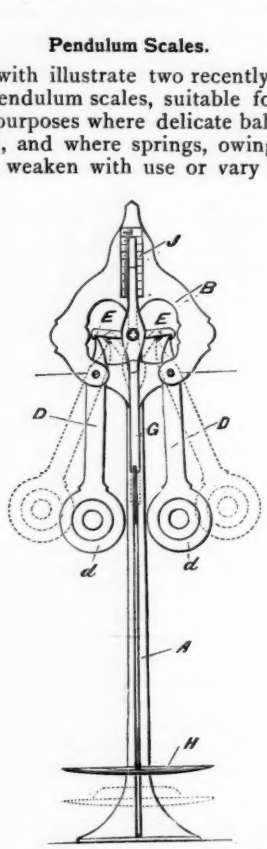
Fig. 3 shows a bottle invented by Emmet P. Putnam, of La Churche, Louisiana.† It consists, essentially, of a conical cup or nipple, formed on one edge of the lip of a bottle of usual shape in other respects, and so arranged as not to interfere with the entrance of the stopper. The contents may not only be poured out as in ordinary

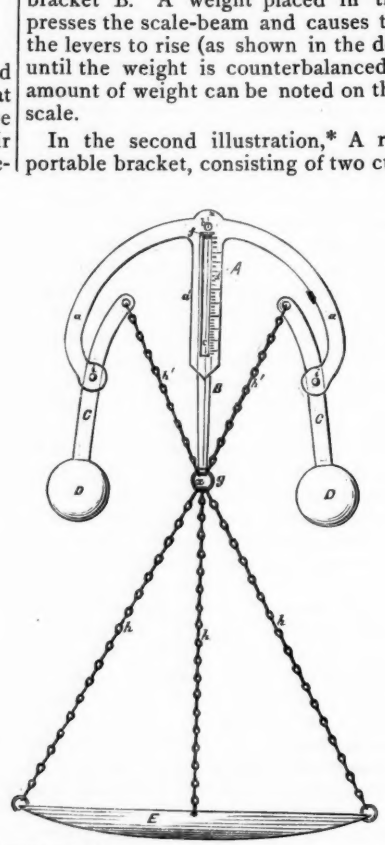
* Patent No. 234,003, of Nov. 2d, 1880.
† Patent No. 234,807, of Nov. 23d, 1880.

ways, but also, by means of the cup which has a small opening (*d*) at its apex, it may be allowed to escape *guttatim*. To facilitate this, the cork may be so far withdrawn as to control the admission of air to the bottle and of fluid to the cup, thus accurately regulating the dropping of the fluid.

Pendulum Scales.

We herewith illustrate two recently-patented forms of pendulum scales, suitable for a great variety of purposes where delicate balances are not needed, and where springs, owing to their liability to weaken with use or vary in consequence of changes of temperature, are not reliable.





Two New Pendulum Scales.

In the first,* A represents a standard, the top of which is curved forward and carries a frame or bracket B, having two branches extending downwards. At the lower ends of these two branches are pivoted two weighted levers, the upper ends of which are tapered and slightly curved. Each of these levers (D) may have its weight permanently fixed to it, or the weight may be adjustable, in order to increase or diminish the leverage. The tapered upper ends of the levers are connected with the scale-beam by means of the connecting bars E E, which are hook-shaped at their outer ends to engage with the pointed ends of the levers. The inner ends of these bars are pivoted to each other and to the scale-beam, G. The scale-beam has a vertical movement; its upper end serving as an indicator and to its lower end the pan H is attached. J is a scale marked on the face of a bracket B. A weight placed in the pan depresses the scale-beam and causes the arms of the levers to rise (as shown in the dotted lines) until the weight is counterbalanced, when the amount of weight can be noted on the indicator scale.

In the second illustration,* A represents a portable bracket, consisting of two curved arms, *aa*, and a vertical, straight, body-portion, *a*. At the point of union a hole (*b*) is provided to enable the scale to be hung upon a suitable support. The central portion of the bracket has a longitudinal slot *c*, and on the front surface at one side a graduated scale *d*. Gliding in this slot is an indicator B, to the bottom of which is attached the ring *g*, which also serves as an attachment for the chains or cords connected with the upper arms of the weighted levers, and with the scale-pan E. The levers *cc* are pivoted to the arms of the bracket, as shown, and have counterbalance weights at their lower extremities.

The mode of action of this scale is similar to the foregoing.

* Patent No. 235,982, granted Dec. 28th, 1880, to Charles F. Batt, of Phœnixville, Pa.

* Patent No. 235,633, granted Dec. 21st, 1880, to John B. Atwater, of Geneva, Ill.

[ORIGINAL COMMUNICATION.]

MISCELLANEOUS CONTRIBUTIONS FROM THE ORIENT.

BY PROF. XAV. LANDERER.

Remedies in Epilepsy.—I have received information from Creta that numerous orders have been received there from all parts of Europe for the *fresh* root of *Dictamnus albus* L., which is found in abundance upon the mountain chains of Candia (Creta), particular Mount Ida. Since the treatment of epilepsy by means of bromides has been anything but successful in Greece—according to the reports of physicians and of patients—I would suggest that recourse be had again to the above-mentioned drug which has been highly praised already by the ancient Greek physicians. Other, and probably equally valuable agents, are *Helleborus orientalis* Lam., and *Nerium Oleander* L., which latter plant I know myself to have produced decided improvement in epileptic cases. By the way, I may mention that it is one of the most bitter and nauseating drugs I am acquainted with. Many vegetable substances differ in their effects, according as they are fresh or dry. Most of the dictamnus root which is kept in stores, and has become old and dry, is without odor or taste, while the fresh, unpeeled root from Creta has an acrid, pungent taste.

The herbalists upon Creta sell also the leaves of this plant, as well as those of *Ruta graveolens* L., in bunches, to women and girls, as an emmenagogue.

Chian Turpentine.—In consequence of numerous inquiries from all parts of Europe and America, regarding a supply of Chian turpentine which has not yet become a regular article of trade, I examined a large number of Pistacia plants (*Pistacia Terebinthus* L.), which grow wild in the neighborhood of Athens, or are cultivated as ornamental plants, on account of their evergreen leaves and handsome purple berries. Among them I found some, the leaves of which had been eaten off by goats, and the ground below was saturated by a resinous mass, so that there can be no doubt but the wounded part exuded some turpentine which was soaked up by the ground. It seems, therefore, probable that a supply of Chian turpentine could be procured not only from Chios, but also from Pistacia trees growing in various parts of Greece.

I have also found that, by pressing the fresh resinous berries between hot plates, a kind of turpentine may be obtained, which has probably the same medicinal properties as that derived from the stem.

Mastic - Sweetmeat. — A favorite confection throughout the Levant is the so-called Mastigoglykon (*μαστιγογλυκόν*), Turkish: sâkyz tâtlîq'.* This is prepared in the following manner: A syrup is first prepared from sugar, and boiled down to a thick consistence; then, for every okka (2.8 lbs.) of sugar used, 4 drachms of the finest mastic, previously rubbed up with a little sugar, are gradually added, and the whole beaten up for hours with a wooden pestle until it is converted into a snow-white mass. A few drops of oil of bergamot are usually added, and confectioners are also in the habit of coloring it with cochineal. Many housewives prepare this confection for domestic use; but it is not as white as that prepared by manufacturers. This confection is taken in quantities of about a spoonful, and followed by a glass of water.

On Greek Honey.—The most celebrated honey of Greece is the Hymettian honey (*Ὑμήττειον μέλι*), also called Thymari honey, because it has a flavor of thyme, which grows plentifully upon and about Mount Hymettus in Attika, south of Athens. This honey was already celebrated in classic times, and has preserved its reputation to the present day. It is exported to England in tin-cans.

The common kind of honey is called Riki (from *ἐρείκη*=Erica), because domestic species of Erica happen to be very common in localities where bee-culture is carried on, and their flowers are a great attraction to bees.

Upon the island of Eubœia, in mountain glens, near Karysto, there existed in former times large tracts covered with wild-growing roses and blackberries. The honey obtained from bees feeding upon the flowers of these plants had a peculiar and distinct odor of roses, and was known as rose-honey (*ῥοδόμελι*). But since those plants have been eradicated, this kind of honey has ceased to exist.

Honey is usually put up in goat-skins and sold at the rate of about 20 cents the okka; in good years even for less.

The Constituents of Podophyllum Root and of Resina Podophylli.

THE *Archiv für experimentelle Pathologie und Pharmacognosie** contains an elaborate paper, by Dr. Valerian Podwyssotzki, Privat-Docent at the University of Dorpat, upon the substances contained in *Podophyllum peltatum* L., and their pharmacological properties. As is well known, the rhizome of podophyllum possesses emetic and purgative properties, generally considered due to a resin contained in it. Buchheim attributed its effects to the anhydride of an inactive acid, podophyllic acid, which he considered to be produced by the action of alkalies upon podophyllin, the podophyllin alluded to by him being a mixture of substances of uncertain na-

* The Turkish *sâkyz-tâtlîq'* means "mastic sweetmeat." *Sâkyz* means properly "resin," and *sâkyz aghâchî* is *Pistacia Lentiscus*; hence *sâkys* is specially used to denote mastic. The large island of Chios, or Scio, is called in Turkish *sâkys adah*, "mastic island." On *sâkys* compare also *Pharmacographia* [2], p. 165, Note 1.—ED. N. R.

* Vol. xiii., 1 and 2, Oct. 30th, 1880.

ture obtained by precipitating an alcoholic tincture of the rhizome with water. Dr. Podwyssotzki, the author of this paper, is the first to have obtained substances of a definite nature out of this so-called podophyllin. The author has obtained from rhizoma podophylli, and from podophyllin—

1. A colorless and difficultly crystallizable and very poisonous substance (½ milligram being sufficient to kill a cat), of a very bitter taste, only slightly soluble in water, but very soluble in alcohol, the alcoholic solution having a slight acid reaction, and which he calls *podophyllotoxin.*

2. By treating the above substance with aqueous ammonia or hydrate of lime, two further substances, the one crystallizable and chemically indifferent, insoluble in water, but poisonous, which, on account of its intense bitter taste, he calls *pikropodophyllin;* the other, which combines with the alkali employed, and when liberated possesses a strong acid reaction, and is easily soluble in hot water, the author calls *podophyllic acid.*

3. A harmless substance crystallizing in yellow needles, resembling *quercetin* in its properties.

4. A considerable quantity of a green oil, as well as of a crystalline fatty acid, both toxicologically inert.

In preparing the toxicologically active principles of podophyllum in a pure state, care must be taken to separate out, as far as possible, the substances 3 and 4. The author's method is as follows: Commercial, or self-prepared podophyllin, finely triturated, is placed in a capacious flask, covered with about ten times its volume of chloroform, and the whole digested for some time over a water-bath. The chloroform is filtered off from the insoluble residue in the flask, and this treated with a fresh quantity, as long as the washings come over colored and taste perceptibly bitter; as a rule this operation must be renewed six or eight times. The washings are then collected and placed in a distilling vessel, and the chloroform distilled off until the whole has assumed the consistence of a thin syrup. The remainder of the chloroform is then expelled, by evaporation, over a water-bath. (If the distillation is continued too long, the tenaciousness of the mass renders its removal from the distilling vessel very difficult.) The concentrated extract is then lixiviated with petroleum-ether over a water-bath until every trace of fatty matter is dissolved out. The first portions of petroleum-ether are of a deep-green, the last of a light-green color. During the digestion with petroleum-ether the tenacious magma swells up a good deal, and requires constant stirring. In proportion as the fatty matters are extracted, the mass gets more friable, and becomes at last a pale yellowish-gray powder. In evaporating the petroleum-ether washings, a deep-green oleaginous substance is obtained, from which, after a time, a colorless fatty acid crystallizes out, the mother liquid consisting of a green, unpleasant-smelling oil. The author has not examined the chemical nature of these two substances, since he found them to be toxicologially inactive. Petroleum-ether, therefore, dissolves out no active principle from podophyllum, while the chloroform extract is extremely rich in such.

The substance resembling quercetin, found in podophyllum, and which is likewise toxicologically inactive, being insoluble in chloroform, does not pass into the chloroform extract. The extraction with chloroform and then with petroleum-ether is, therefore, the best and directest way of getting at the active principles of podophyllum. The author is engaged in examining the chemical constitution of these active principles, and reserves an account of his researches in this direction for a future paper.

The author made experiments with podophyllotoxin and pikropodophyllin. Podophyllotoxin is the most rapid in its effects. This substance, on account of its comparative solubility, admits of being subcutaneously injected, while pikropodophyllin can only be applied internally given in oil. The author's researches made with these two substances lead him to conclude that the effect is no mere local one, and that, besides their emeto-cathartic properties, they act very powerfully on the nervous system.

The results of previous clinical experience with podophyllin showed that its action on the human system is comparatively slow, requiring from twelve to twenty-four hours to take effect. The author's experience with the pure substances above mentioned made on animals shows a much quicker action. The poison acts at first as a purge, then follows vomiting, weakness, and finally death from coma, the heart being found active after the post-mortem.—*Chemist and Druggist*, Dec., 1880.

Koumys.—The following formula for the preparation of koumys is taken from the *Apotheker Zeitung* (Leipz.-Eichst): Take 9 liters of good skimmed cow's milk, not over 18 hours old, pour it into a stone-ware pot of the capacity of 16 liters, and place the latter in a room free from dust, at a temperature of 18–25° C. (= 65–77° F.). Then dissolve 500 grams of milk-sugar and 250 gm. of grape-sugar in 3 liters of hot water, filter, allow to cool, and add the solution to the milk. Then add 40 gm. of good yeast and 2 liters of already prepared koumys, which, for this purpose, is purchased for the first operation. Stir the whole mixture once every hour during the day, and, after 2 or 3 days, when it begins to separate into 3 layers, add 500 gm. of good Malaga wine and 50 gm. of cognac. Stir again, transfer at once to strong bottles, cork them with good, previously soaked corks, and tie them down. Let the bottles stand for a short time in the same room, then place them in the cellar on their side. A large stock should not be prepared, since it easily turns sour. But if prepared carefully, according to the preceding process, it keeps well for two or three months.

RECENT PAPERS.

Committee of Revision of the German Pharmacopœia.—According to the *Pharm. Zeitung*, the following questions have been laid before this Committee for decision :

1. Are the titles of the pharmacopœial articles to be arranged in alphabetical order, as in the first edition?

2. Are the present titles to be retained, or are the following alterations to be made : *a.* The names of the metals, kalium, natrium, etc., to be substituted for those of the oxides, kali, natron, etc. *b.* The term radix to be used instead of tubera, rhizoma, etc. *c.* The term liquor to be used instead of solutio, for denoting solutions of chemical salts?

3. Are the formulæ to be given in the case of chemicals, and are these formulæ to be given in both the old and new system?

4. Are the synonyms to be given in connection with the title of each preparation, or is it preferable to append a complete list of them in form of a table?

5. Is it advisable to so arrange the text that, in the first portion of each description, the properties and characteristics are to be given, to be followed by tests of purity, etc.? Is this method to be followed also in the case of crude drugs?

6. Is there a limit of allowable accidental impurity to be established in the case of chemicals?

7. In which cases shall the method of testing be precisely defined?

8. Is a method of preservation or storage to be prescribed in certain cases?

9. Are the working formulæ for preparations to be increased in number, or are they to be restricted only to those where a difference of process may produce different results?

10. Are the working formulæ to be made complete in every case, instead of merely referring, in certain cases, to a pattern formula as guide for a whole class?

11. Are the reagents to be put in a separate table as heretofore?

12. Is the strength of the reagents to be stated in general, and also with a view to their volumetric use?

13. Does the Table of Maximum Doses require a revision, and should to this be added the maximum doses for hypodermic injections?

14. What changes are to be made in tables B (names of medicines which are usually called poisons, and which are to be preserved *very cautiously* in closed apartments) and C (names of medicines which must be kept *cautiously* and separate from the others), both in the text and in the superscription?

15. Are the following tables required in the Pharm. Germ.: *a.* Table of atomic weights. *b.* Table of solubilities at different temperatures and in different solvents. *c.* Table of specific gravities at different temperatures?

16. Is an index required, giving the preparations and other remedies in groups arranged according to their origin?

17. Is a list of the changes introduced in the new Pharmacopœia to be added?

18. Is it necessary in the Pharmacopœia to designate those remedies which are only to be dispensed on the prescription of an authorized physician, as well as those which are not to be repeated without special permission of the prescribing physician?

The Committee has already terminated its preliminary work, and is now engaged in the revision of the text, for which purpose a sub-committee, composed of chemists and pharmacists, has been selected, to which were added, as medical experts, Professor v. Ziemssen, of Munich; Prof. Gerhard, of Würzburg, and Prof. Eulenburg, of Greifswald. It is the intention to reduce the number of officinal substances considerably. The general committee has also decided, with 32 ayes against 2 nays, to publish the Pharmacopœia in the *German language* under the title: *Arzneibuch des Deutschen Reiches.* This last resolution requires to be confirmed by the Imperial Government, and, as it has not yet been confirmed, some doubts are expressed whether this will be done.

We should exceedingly regret to have such a decisive vote of representative experts overthrown by outside considerations. Undoubtedly the titles of the preparations would be given as before in Latin; and, in our opinion, it is high time to do away with the antiquated custom of adopting for the officinal pharmacopœia a language which, though it may be understood by most, or perhaps all the members of the profession, yet is so little recognized or approved that the vernacular translation will in all or most cases be preferred.

In a subsequent number of the *Pharm. Zeit.*, we read that about 250 of the present 800 articles of the Germ. Pharm. will probably be abolished, and that it is proposed to relegate these to an appendix for the convenience of physicians who may still prescribe them. The *Phar. Zeit.* is mistaken when it says that this would be in imitation of the U. S. Pharmacopœia, because the appendix or "secondary list" of the latter was not intended to comprise drugs or preparations discarded from the Pharmacopœia proper, but to contain the names of crude drugs only, chiefly of domestic origin, which were not of sufficient importance to be considered entitled to a place in the "primary list," and many of which were simply native substitutes for foreign crude drugs.

The German title proposed for the Germ. Pharm. by the Committee appears to have already been abandoned, for the reason that the abolition of the present title ("Pharmacopœia Germanica") would separate the various editions of the work too much from each other in libraries and catalogues.

Quantities of Opium Contained in Various Preparations.—The *Druggist's Circular* publishes the following table compiled by "T. J. C.," in which the quantities mentioned are the equivalents of one grain of opium.

Acetum opii, U. S. P.	6½	minims.
Confectio opii U. S. P.	36	grains.
Emplastrum opii, U. S. P.	8	"
" " Br. P.	9	"
Extractum opii, U. S. P.	½	"
" " Br. P.	1/10	"
" " liq., Br. P.	10	minims.
Morphiæ hydrochloras, Br. P.	⅛	grains.
" " liq., Br. P.	15	minims.
Morphiæ murias, U. S. P.	⅛	grains.
Morphiæ sulphas, U. S. P.	⅛	"
" " liq., U. S. P.	60	minims.
" " liq., Magendie's.	4	"
Pilula opii, U. S. P.	1⅓	grains.
Pilula plumbi c. opio, Br. P	8	"
Pilula saponis co., U. S. P.	5	"
Pulvis cretæ arom. c. opio, Br. P.	40	"
Pulvis ipecacuan. co., U. S. P.	10	"
" " c. opio, Br. P.	10	"
Pulvis kino c. opio, Br. P.	20	"
Tinct. camphoræ c opio, Br. P.	240	minims.
" opii, U. S. P.	13	"
" " acet., U. S. P.	10	"
" " camph., U. S. P.	240	"
" " deodorata, U. S. P.	13	"
Trochisci glycyrrhiz. c. opio, U. S. P.	60	grains.
Ung. gallæ c. opio, Br. P.	14	"
Vinum opii, U. S. P.	8	minims.
" " Br. P.	12	"

Addition of Soap to Pomades.—The *Zeitschrift d. Osterreich. Apot. Ver.* says that the addition of soap to pomade renders it very white and unctuous, and enable one-third its weight of water to be incorporated with it. Before adding the perfume, an ounce of soap, dissolved with 2½ grains of borax in hot water, is to be added to 3 lbs. of pomade.

Supersaturated Saline Solutions.—(C. TOMLINSON.) The author has observed that with a southerly or westerly wind, the action of oils on a supersaturated solution of sodium sulphate is to throw down the seven-atom salt, in a powdery form, during damp weather, but in crystals during fine weather. With a northerly or easterly wind, the oil determined the immediate solidification of the solution.

The author attributes these results to the presence or absence of ozone in the air, and cites various experiments adverse to the conclusions of different observers that they are due to particles of sodium sulphate in the oils employed.

Oil of cajuput, previously inactive, was rendered active by the action of phosphorus in presence of water. Castor oil and benzene gave the same result.

Various essential oils and other substances, which were powerfully active, were rendered totally inactive by distillation; but the distillates quickly became active when exposed for a short time to the air, or when a few drops of ozonized water were added.

The solution of sodium sulphate did not solidify by itself even when dropped through the air while a south-east wind was blowing.

Ozone prepared by means of electricity was found to render inactive oils powerfully active in a very short time. On one occasion, when there was a large quantity of ozone in the air (wind N. E.), a paraffin oil was distilled, and the distillate was found to be powerfully active; the same oil distilled during a south-west wind was quite inactive.

Sodium sulphate solution mixed with inactive oil of cajuput was shaken with hydrogen dioxide, but the solution did not solidify.

Inactive cajuput and paraffin oils shaken up with pure oxygen were rendered active, ozone being formed at the same time. Castor oil did not act in the same way.

Charcoal, heated and cooled out of contact of air, was inactive when first exposed to the air, but became active after a short exposure to during a north-east wind.—*Proc. Roy. Soc.* in *Journ. Chem. Soc.*, 38 (1880), 438.

Assay of Jaborandi Leaves.—DR. A. POEHL, at the close of a valuable paper on Jaborandi Leaves, published in the *Pharm. Zeitschr. f Russland* (1880, No. 8), treats of the valuation or assay of jaborandi leaves and the pharmaceutical preparations made from them. All attempts to determine the quantity of alkaloid by titration, either with Mayer's solution (13.546 gm. of mercuric iodide, and 49.8 gm. of potassium iodide in 1 litre of water), with potassium-bismuth iodide, or with phospho-molybdic acid, gave unsatisfactory results. The best way was found to determine the alkaloid gravimetrically, as phosphomolybdate.

The assay of the leaves is conducted as follows: After being cut, they are infused in hot water containing 1 per cent of hydrochloric acid; the infusion is precipitated by basic acetate of lead, and the filtrate from this mixed with hydrochloric acid, until no more chloride of lead is thrown down. From the filtered liquid the *pilocarpine* is now precipitated by adding an excess of phosphomolybdic acid, the precipitate is washed with water containing hydrochloric acid, dried at 100° C. and weighed. 100 parts of the phosphomolybdate correspond to 45.66 parts of pilocarpine.

The pilose leaves of *Pilocarpus officinalis* [a species, the existence of which has been assumed by Dr. Poehl on the basis of anatomical differences from the leaf of *P. pennatifolius*, but which still requires confirmation] yielded, on an average, 1.97 per cent pilocarpine by this method; the hairless leaves, 1.86 per cent; the bark of branches and stem, 0.408 per cent. On the other hand, the leaves of *Pilocarpus pennatifolius* yielded only 0.159 per cent.

Before the tincture can be assayed in this manner, the alcohol must be gotten rid of. The infusion may be at once used as such, but the extract must be dissolved in acidulated water.

Synthesis of Citric Acid.—GRIMAUX and ADAM, two French chemists, have succeeded in producing citric acid artificially. Starting from glycerin, they first produced, by treating it with chloride of sulphur and oxidation with potassium dichromate, *dichlorhydrin* ($CH_2Cl.CH.OH.CH_2Cl$). From the latter, by oxidation of the symmetrical dichloracetone, and by heating this with concentrated hydrocyanic acid, dichloracetone-cyanhydrin. This was converted, by treatment with hydrochloric acid, into dichloracetonic acid, the sodium salt of which, on being heated with potassium cyanide, yields a dicyanide, from which, after saturation with hydrochloric acid, warming for 15 hours in a steam-bath and careful treatment with lime, a crystalline acid was obtained, which was found identical with *citric acid*, both chemically and physically. The constitution of this body is therefore cleared up, and the only vegetable acid which has so far resisted synthetical production may now be produced artificially.—*Pharm. Zeit.*

[Of course, it will not be practicable to use the above process, but probably another way, avoiding the use of poisonous ingredients, will some time or other be discovered.—ED. N. R.].

Crystallization of Alums; Cubic Alums and their Accommodation.—(ALFRED POLIS.) The author examined the conditions for obtaining cubic alum and its behavior with other alums as regards overgrowth. The best results are obtained by dissolving 250 grams alum in 800 cc. water at 25° to 30°, adding 45 grams sodium carbonate, and exposing the clear solution to spontaneous evaporation. Ten of the crystals first formed were suspended in the liquid, and after seventy-four to ninety-two days they had become pure, shining, permanent cubes. On suspending such cubic alum in a solution of potash-chrome alum, the crystal increased as a cube appearing to be a cubic chrome alum crystal, but displaying small, subordinate octahedron surfaces.—*Ber. Deutsch. Ch. Ges.* and *Chem. News*, Aug. 27th.

Uses of Soap Bark.—One of the constituents of this bark is saponin, a principle widely diffused through the vegetable kingdom, and which makes an abundant froth with water. An infusion of the bark not only acts like a mild soap, but also as a moderate stimulant and astringent to the skin. It has been used with marked benefit in pityriasis capitis and has produced excellent results in chronic ulcers and eczema of the extremities. The infusion is also a valuable remedy for aiding in arresting fetid perspiration and excessive secretion.

In cases involving the face and armpits, the patient is instructed to dip a small piece of sponge in the infusion and carefully mop over the surface once or twice daily. When the hands or feet are affected, they should be bathed in the solution nightly, or on alternate nights, according to the condition. When a more active stimulant and astringent effect is required, the "tincture of saponin" can be employed with much advantage. The tincture is made by extracting the bark by strong boiling alcohol (four ounces of bark to one pint of alcohol). It is miscible with both water and oil and has the power of dissolving, emulsifying, and removing fats and dirts from the skin. In many diseases, especially in seborrhœa sicca, it is preferable to the tincture of green soap. It has all the advantages that are claimed for the latter, and at the same time is free from the high diffusing, penetrating, and destructive action on the tissues that the latter possesses. This tincture has been used with great benefit, not only in diseases to which the infusion is applicable, but also in general thinning and loss of hair in different parts of the body.—*Phila. Med. Times.*

Nitro-Glycerin for Sea-Sickness.—In the *British Medical Journal* of Oct. 23d, a physician gives an account of a successful trial upon himself of $\frac{1}{100}$ of a grain of nitroglycerin for the relief of sea-sickness. Two lads who were similarly suffering experienced relief from $\frac{1}{300}$ of a grain each.

Manufacture of Acid Phosphates.—MR. JAMES T. SHINN, of Philadelphia, contributes the following to the *Druggist's Circular:* The bone phosphate of lime is not entirely soluble in phosphoric acid, and can readily be made from the carbonate. In 156 parts are 72 parts of phosphoric acid and 84 parts of lime, which latter are equivalent to 150 parts of carbonate of calcium. The phosphate of magnesium consists of 72 parts of the acid and 60 parts of magnesia in every 132 parts of the phosphate. In 175.4 parts of phosphate of potassium are 72 parts of acid and 94.4 parts of caustic potash—equal to 138.4 of the carbonate. The officinal phosphate of iron is freely soluble in diluted phosphoric acid, and may be added direct. From these proportions the following formula for a pint of each solution is deduced:

Liquor Acidi Phosphorici.

Carbonate of calcium	369 grains.
Magnesia (calc.)	116 "
Carbonate of potassium	151 "
Syrupy phosphoric acid (60%)	1,721 "
Water, sufficient to make	1 pint.

Liquor Acidi Phosph. Comp.

Carbonate of calcium	369 grains.
Magnesia (calc.)	29 "
Carbonate of potassium	25 "
Phosphate of iron	64 "
Syrupy phosphoric acid (60%)	1,705 "
Water, sufficient to make	1 pint.

Mix the acid with half pint of water (for the second formula add the phosphate of iron and stir until dissolved), then add, gradually, the carbonate of calcium, stirring until effervescence ceases and the freshly formed phosphate is dissolved, and finally add the magnesia and carbonate of potassium; stir until dissolved and make up the measure to one pint with water. On standing for several days, a slight precipitate occurs which may be prevented by slightly increasing the amount of acid. The whole can be prepared in a half-hour, at a cost of 40 cents a pint. These two preparations thus prepared have a specific gravity of 1.170 and 1.121 respectively.

Crystalline Prussian Blue (W. GINTL).—If recently precipitated Prussian blue is treated with a moderate excess of hydrochloric acid, at a gentle heat, it dissolves to a slightly yellowish liquid, which, on exposure to the air, gradually deposits Prussian blue as a crystalline sediment, displaying a splendid coppery lustre by reflected light. So-called Turnbull's blue dissolves in hydrochloric acid in the same manner as ordinary Prussian blue, and yields similar crystals, a further evidence for the identity of the two compounds.—*Chem. Centralblatt*, No. 23.

Effects of Inhalation of Nitrogen.—DR. CUMMING MILL describes in *The Lancet* the effect of inspiring nitrogen upon a man who was experimenting with protective armor to which is attached a mechanism for providing a supply or respirable air, consisting of a cylinder containing oxygen under pressure; a bag into which the oxygen escapes; a purifier containing caustic soda to filter the expired air of its carbonic acid, and a tight-fitting mask covering the mouth, nose, and ears. This mask is attached to the purifier by two valved pipes, one for inhalation, the other exhalation. The air passing through the filter is deprived of its carbonic acid and then mixes with the oxygen in the bag and is ready to be reinhaled. In attempting to test the length of time the supply in the bag would serve without the addition of fresh oxygen from the cylinder, the experimenter (who was under water) having exhausted the oxygen inhaled only pure nitrogen, when he at once became unconscious, the excess of nitrogen being unappreciated so long as any oxygen remained. On failing to respond to signals from above, the experimenter was drawn to the surface, and on the arrival of the doctor presented the following symptoms: Surface cold, pulse 100, small and weak, axillary temperature 96°, heart sounds normal but weak, left lung normal, right lung slightly dull on percussion, and fine crepitation heard all over. A quantity of blood had been spat up, and following the arrival of the doctor about an ounce of arterial blood was expectorated, and was followed by more which was frothy and mixed with mucus. The conjunctivæ were injected and around the eyes and lids echymotic spots appeared. Patient was then quite sensible and clear, without headache or nausea or symptoms of carbonic-acid poisoning.

New Method for the Quantitative Determination of Arsenious in Presence of Arsenic Acid.—(LEOPOLD MAYER.) Taking as a point of departure the known property of arsenious acid to reduce ammoniacal solutions of silver at a boiling heat, the author bases upon it a convenient gravimetric method for the determination of arsenious acid along with arsenic acid. The common method of precipitating arsenic with magnesia solution as ammonio-magnesium arseniate is not free from sources of error, due to the solubility of the latter compound. The methods of H. Rose and Vohl are tedious and circumstantial. The author's method depends on the following decomposition. If a solution contains in addition to arsenious acid no other substance which reduces the ammoniacal solution of silver at a boiling heat, the reduction takes place according to the following equation:

$$As_2O_3 + 2Ag_2O = As_2O_5 + 2Ag_2.$$

After boiling for half an hour, the reduced silver separates out as a fine powder, and is filtered off and weighed. The quantities of silver thus obtained correspond to the arsenious acid employed. The reduced silver must be washed with warm ammonia and water containing sal-ammoniac. If a portion of the silver is reduced in the form of a mirror on the sides of the glass it is dissolved off in nitric acid, precipitated as silver chloride, which is added to the main quantity of the silver, for such small traces of silver chloride are reduced on ignition by the carbon of the filter. In applying this method for the determination of arsenious acid, in presence of arsenic acid, the arsenious acid is determined by boiling with ammoniacal solution of silver. On the reduction of the silver, the arsenious acid passes into arsenic acid, which is determined along with the original arsenic acid. The quantity of the latter is found as difference.—*Chem. News*, Oct. 29th.

Gigantic Rhubarb.—The *Journal de St. Petersburg*, of 1st (13th) Oct., 1880, brings news from Colonel Przewalsky, the Russian explorer of Central Asia, who attempted, in the spring of the past year, to travel from the neighborhood of Sining-fu to the sources of the Yellow river or Hoang-ho. The passage along this river was extremely laborious, as the plateau, through which it courses south of Sining-fu, is traversed by numerous glens, which greatly retard and endanger the advance of beasts of burden. On the other hand, both the fauna and flora of this district were found to be exceedingly rich. A blue pheasant, of which only a few specimens are to be found in European museums, is met with here in large numbers, and *rhubarb*, which grows wild here, attains an extraordinary development. Roots were found which weighed 26 pounds, being 16 inches long, 12 inches broad, and 7 inches thick. At the confluence of the river Tshur-mysh, the Burchanbuda mountains interposed a barrier impassable for the beasts, and it was impossible to proceed by making a détour. Colonel Przewalski was, therefore, compelled to return, and to extend his explorations in another direction.

Preparation of Antimony in Form of a Black Impalpable Powder.—Solution of chloride of antimony (butter of antimony) is gradually diluted with successive small quantities of water, until, after shaking, the produced precipitate of basic chloride of antimony ceases to be redissolved. The clear liquid is then decanted, after standing a sufficient length of time, and small pieces of aluminium wire are added. This causes a violent disengagement of pure antimoniated hydrogen, and metallic antimony is deposited as a very fine black powder.—*Polyt. Notizbl.*, 1880, No. 18.

Delicate Test for Poisons.—M. J. ROSSBACH calls attention, in the Vienna *Klinische Wochenschrift*, to the remarkable susceptibility of small animals, like frogs, mice, etc., to the effect of poisonous alkaloids and glucosides, traces of the poisons so minute as to be beyond the power of chemical tests to discover, may thus be detected. For example, .00005 of a gram of strychnine causes tetanus and death of frogs and mice (Falck, Jr.). .0001 gr. of atropine (Gräfe) or .0000005 gr. (Ruiter) will dilate the pupil in man and other mammals. .0002 of a gm. of veratrine produces prolongation of the muscular curves of frogs (Bezold). .0001 of a gram of digitoxine, or .00005 gr. of antiarine causes systolic stoppage of the heart (Schmiedeberg). .000005 of a gram of curarine paralyzes the ends of the motor nerves in frogs (Preyer). .0001 of a gram of muscarine causes diastolic stoppage of the heart.

These tests would appear sufficiently minute, but Prof. Rossbach suggests others still more delicate. A drop of water containing infusoria having been placed on a microscope slide, without being covered, is brought under the objective, and, while the infusoria are carefully watched, the minutest possible drop of the solution suspected to contain poison is allowed to touch the edge of the fluid on the glass. If organic poisons, such as above mentioned, are present, the infusoria undergo a lightning-like destruction of their molecular tissues, and become a formless sediment.

For example, a solution of 1 part of strychnine in 15,000 produces intense enlargement of the contractile sac and swelling of the body. If a drop of water containing infusoria and weighing .001 gram be used as a test, the quantity of poison required to produce this effect will be .00000006. A similar effect is caused by a solution of veratrine, 1 in 8,000, the weight of alkaloid which can be detected bring .00000022. Atropine influences infusoria only when 1 part is present in 1,000 of water, but even then $\frac{1}{1,000,000}$ of a gram ($\frac{1}{15,000,000}$ of a grain) of the alkaloid can be detected. Acids and caustics alkalies act only in solutions of 1 in 400 or 600. The author says, in illustration, that, if the stomach of a person poisoned by strychnine contains a *litre* of fluid, and only .05 gram (¾ of a grain) of the alkaloid, a single drop of the fluid will contain forty times as much strychnine as is needed for this test.—*Chem. and Drug.*

Carbonate of Magnesium.—R. OTTO and G. GABLER have made comparative analyses of various kinds of commercial carbonate of magnesium, and have found that the English carbonates, as well as two German kinds, are less pure than that made at Nauheim, Germany. The latter contains a trace of chlorine more than the English products, which approach it otherwise nearest in purity, but it contains a much smaller quantity of lime and is almost entirely free of sulphuric acid. The most impure, and for medical purposes entirely unfit carbonate, is that manufactured at Oeynhausen, Prussia (District of Minden). The process of manufacture followed at Nauheim is that first used by J. Pattison, of Washington (Durham, England). It depends upon the fact that, on treating calcined dolomite,* in the presence of water, with carbonic acid under pressure, the magnesia dissolves as bicarbonate before any of the accompanying lime enters in solution. The calcined and finely-powdered mineral is introduced, together with water, into a cylinder with horizontal axis, and, while it is being kept in constant motion by a stirring apparatus, carbonic acid gas, under a pressure of five to six atmospheres, is pressed into it. The resulting solution of bicarbonate of magnesium, which is perfectly free from lime, if the process was properly managed, is then transferred to a vertical cylinder, where it is heated with steam, whereby carbonate of magnesium is separated, which is collected, formed into prismatic pieces, and dried. The carbonic acid gas required issues from the earth immediately outside of the factory; and the dolomite is furnished by the quarries of May and Urban, near Dietz and Steelen on the Lahn.—From *Arch. d Pharm.*, 1880, Aug., p. 96.

* Dolomite is a mineral essentially consisting of a double carbonate of calcium and magnesium, and, according to its location, containing variable traces of other bodies, as iron, manganese, etc. It constitutes, in different localities, whole mountain-chains in formations of different epochs.

Tincture of Acetate of Iron (Rademacher).—MR. O. SCHLICKUM proposes the following modified process to prepare the above tincture:

Solution of tersulphate of iron (sp. gr. 1.318)	25 parts.
Solution of acetate of potassium (sp. gr. 1.180)	31 "
Alcohol	33 "

Mix them, let the mixture stand for twenty-four hours in a well-covered beaker-glass, then strain through a linen strainer, express, and wash the residue with a mixture of equal parts of water and alcohol until 80 parts of liquid are obtained. To this add 20 parts of water.

The resulting tincture (100 parts) has a handsome red color, is very limpid, and keeps exceedingly well, though at first it may deposit very small quantities of sulphate of potassium, from which the clear liquid may at any time be decanted without having recourse to filtration. It contains all the iron of the solution of tersulphate employed, that is 2 per cent of metallic iron, or 8 per cent of neutral ferric acetate. Both in the percentage of iron, as in that of alcohol, it agrees with the tincture prepared according to Rademacher's original formula. The excess of undecomposed ferric sulphate is not nearly as great as in the latter. Since 25 parts of solution of tersulphate of iron require, for complete decomposition, 31⅓ parts of solution of acetate of potassium, it is evident that only a minute excess of ferric sulphate remains undecomposed. At the same time, only *traces* of sulphate of potassium are left in the tincture: 31 parts of acetate of potassium yield, on decomposition, 9¼ parts of sulphate, of which 8¾ parts crystallize out from the alcoholic solution, during the first twenty-four hours. The remaining ½ per cent is mostly deposited during the first period of preservation.

Another method is the following:

Sol. of tersulphate of iron (sp. gr. 1.318)	25 parts.
Crystallized acetate of sodium	14 "
Alcohol	33 "

The sodium salt is added to the iron solution, and *very gently* warmed in a porcelain capsule until the salt melts. The alcohol is then added, and the whole exposed for some hours to a cool temperature (8–10° C.), whereby the sulphate of sodium is almost completely separated in crystals. The precipitate is collected on a linen strainer, expressed, washed with a mixture of equal parts of water and alcohol until the strained liquid amounts to 66 parts, and finally sufficient water is added to bring the product to 100 parts.

To Detect Arsenic in Fabrics.—An easy method for detecting the presence of arsenic in paper-hangings, etc., is given by Dr. Henry Barnes, in the *Practitioner*, viz.: Immerse the suspected fabric in strong ammonia (water) on a white plate or saucer. If the ammonia becomes blue, the presence of a salt of copper is proved; then drop a crystal of nitrate of silver into the blue liquid, and, if any arsenic be present, the crystal will become coated with yellow arseniate of silver, which will disappear on stirring.

Toxic Dose of Erythrophlœine.—GERMAIN SEE and BOCHEFONTAINE have studied the physiological effects of erythrophlœine, and have found it to possess a remarkable action on the heart, almost identical with that of Homolle's and Quevenne's Digitaline. By experiments upon animals they found that a dose, in the proportion of *one* milligram (0.001 gm. = $\frac{1}{64}$ grain) for every kilogram (2⅕ lb.) of the total weight of the animal, produces no visible toxic effects, but that a dose of 1½ milligrams per kilo produces death in a few hours.—*Monit. de Médecine.*

Note on Nutgalls.—The insect of the Cynips species (*Cynips quercus folii*) which, armed with a very long borer, produces the gall, deposits its egg in the cellular tissue of the plant; the place pierced expanding, causes the excrescence in which the larvæ, having left the egg, are nourished and developed, to reappear after some time as a winged insect, which at last escapes from its prison by an opening the animal has made from within to without by gnawing the dried gall.

As long as the larva, which is, in most cases, confined to a very small cavity in the centre of the nut, lives and feeds, the gall retains its sap, and this, which exudes in a concentrated state, contains more of that tannin so valuable to tanners and dyers than any other part of the oak.

Turkish gall-nuts, which grow on the young branches of the gall oak (*Quercus infectoria*), the stunted oak of Asia Minor, Syria, and Persia, are found in the neighborhoods of Alashehr, Kula, Magnesia, Ushak, and Pergamos. They average from four to nine lines in diameter, are round, of rough surface, and covered with knobs and ridges. They are of a woody substance, and their flavor is acid and astringent. The young galls, which still contain the insect, are of a dark color, heavy, and of a stiff texture. They are distinguished as black and green galls. The white and yellow galls, on the contrary, are those which the insect has left, as one sees by the hole or punctures on the surface. They are more of a spongy consistence, lighter, and are poorer in tannin.

A fourth species, undeveloped, but which the insect has nevertheless quitted, is the gall exported under the name of tshinkir, or crown gall. It is more yellow and half the size of the others, but is, however, richer in tannin than the white galls. The annual crop varies from 2,000 to 2,500 sacks of two Vienna quintals, worth altogether 325,000 silver florins. The whole, after it has been sorted, is exported to Europe, chiefly England, Germany, and Austria, and to America. (KARL V. SCHERZER, in his work: "*Smyrne*, etc.")

Russian Fruit- and Berry-Wines.—Russia is comparatively poor in native wines, only the Caucasus and the Crimea producing them in moderate quantities. But in many districts of Russia the inhabitants have a substitute in wines made from fruits and berries. Of fruits, the apple alone is used. But there are no less than 13 varieties or kinds of berries which are used, either alone, or mixed for the preparation of this beverage. The only additions which are made to pressed and fermented fruit-juices are pure grain spirit, sugar, and honey. The apparatus used consists merely of a press, filter and fermenting tub, from which the wine is filled into casks or bottles. If the sugar and alcohol which are added are allowed to pass through the complete process of fermentation with the fruit-juice, the resulting product frequently equals, in color, taste, and "bouquet," many good grape-wines. The use of honey imparts to many wines a peculiarly rich and agreeable bouquet recalling that of "mead" (see NEW REM., 1878, 203).

The fruits and berries of the following plants are utilized on the large scale in the manufacture of these wines:

Pyrus Malus L., apple.
Pyrus Aucuparia L., Europ. mountain ash.
Ribes album (var.) L., white currant.
Ribes rubrum L., red currant.
Ribes Grossularia, L., gooseberry.
Rubus Idæus L., raspberry.
Rubus Chamæmorus L., cloudberry.
Rubus fruticosus L., blackberry.
Fragaria vesca L., strawberry.
Vaccinium Myrtillus L., whortleberry.
Vaccinium uliginosum L., great bilberry.
Vaccinium Vitis Idæa L., cowberry.
Onycoccos palustris L., cranberry.

Treatment of Itch.—In the Catharine Hospital, of Stuttgart, patients affected with the itch receive first a bath, after which they are anointed three times during the first day with a mixture of equal parts of Italian petroleum [American would probably have the same effect], liquid storax, and alcohol. Afterwards they are again given a bath and dismissed. Only in rare cases was a fourth inunction necessary. The effect upon the skin is apparently quite insignificant. Compared with the treatment by green soap, the above method saves time, labor, and money, and is much less disagreeable for the patients. —*Pharm. Zeitschr. f. Russland*, No. 18.

Technical Uses of Boracic Acid.—In answer to an inquiry made by a correspondent in the *Schweizer Wochenschrift f. Pharmacie*, whether boracic acid was used in the arts for other purposes than to make borax, J. DEGEN communicates a property which has, so far, not been made practical use of, though Tate (*Journ. Chem. Soc.*, 12, 160) already stated that it displaced sulphuric acid "incompletely." Mr. Degen introduces into a retort of hard glass, with well-cooled receiver, equivalent proportions of sodium sulphate and boracic acid, previously well mixed. The mixture is then heated over its melting point, which is reached very rapidly, and the sulphuric acid which distils over, and which is distinguished by its purity, provided the ingredients and the material of the vessels were of the proper kind, may be collected in the receiver by simple cooling with water. "The experiment is not accompanied with danger, even for those less practised." [So says the author, but cooling a receiver of sulphuric acid with cold water is in general a risky business, since, if the receiver should crack, and some water fall into the still hot acid, the whole of this might be scattered about with great violence by the steam into which the water is almost instantly converted. In our opinion, it is certainly safer not to cool the condenser, but to use a retort and receiver with rather long neck.]

Therapeutic Value of Homatropine.—DR. HENRY S. SCHELL writes in the *Specialist and Intelligencer* of the uses to which the hydrobromate may be put in ophthalmic practice. As a mydriatic, it is not as desirable as atropine, owing to its tendency to cause irritation of the conjunctiva, and the impermanence of its effects. The first *may* be in consequence of the fact that the salt is not absolutely neutral. As a suppressor of accommodation, however, homatropine is valuable in a solution of two grains to a fluid drachm of distilled water. The accommodation begins to be affected in about ten minutes, full suppression is reached in an hour or less, recession begins in about three hours, and is complete in ten hours from the time when the application is made. No constitutional effects are noticed. Compared with it, the paralysis from atropine is much longer, being in the neighborhood of ten days' duration.

Tincture of Opium.—MR. J. B. MOORE, of Philadelphia, recommends the following method for making tincture of opium: Take of powdered opium No. 10, 10 Troy ounces; boiling water, 70 fluid ounces; stronger alcohol, 58 fluid ounces; water, sufficient.

Pour the boiling water upon the powdered opium in a suitable vessel; digest the mixture with frequent stirring for one hour at a temperature of from 170° to 190°. Then transfer the mixture at once to a close vessel, and add to it the stronger alcohol. Macerate, shaking occasionally until the mixture cools. Strain through muslin with strong expression. Rub the residuum between the hands until reduced to a uniform condition, and introduce it into a glass funnel prepared for percolation; press it, *not too firmly*, and gradually pour upon it the expressed liquid, and, when it has all passed from the surface, continue the percolation with water until eight pints of tincture are obtained. A covered vessel is recommended for the process of maceration.

In using undried lump opium, cut the drug into small pieces, and digest in the water at the temperature above mentioned, until it is completely softened, when it should be worked in the hands until thoroughly disintegrated, small hard lumps being treated in a mortar. Owing to the necessity for making an allowance for moisture when undried opium is used, it is advisable to first dry a weighed portion and estimate the loss of weight.—*Drug. Cir.*

Poisonous "Star Anise."—(THEO. HUSEMANN.) A. J. C. Geerts, of Yokohama, has published in the *Pharm. Weekblad* a notice on a fruit closely related to staranise, which has heretofore been but little noticed by pharmacologists—though it had occasionally been pointed out as poisonous and suspicious—and the mother-plant of which has even been repeatedly described as the true *Illicium anisatum* L. The fruit in question is derived from *Illicium religiosum* Sieb., a Japanese tree, the evergreen branches of which have been used from time immemorial for decorating the temples and statues of the gods in Japan, but the fruits of which are regarded as poisonous, and are actually so, as is proved by a recent case of poisoning in the district of Kanagawa, where the oil pressed from these seeds had been used in cooking and had caused the death of an adult and the serious illness, characterized by repeated vomiting, of five other persons. This oil is used in Japan for illuminating or lubricating purposes only, and never in cooking; the fruit is likewise never used as a condiment, while on the contrary, the real staranise, that is the fruit of *Illicium anisatum* L., which is not a native of Japan, is commonly imported and used.

The confusion or false identification existing, even in modern text-books, between these two species of *Illicium* is owing to a mistake of Linné, who regarded the Japanese tree, as figured by Kæmpffer, in his *Amœnitates Exoticæ* (Lemgo, 1712), as the mother-plant of genuine staranise, and described it as *Illicium anisatum* L. But instead of this being synonymous with *I. religiosum*, it is entirely different from the true *I. anisatum*, native of Cochin-China, and described under the latter name by the Portuguese missionary and botanist Loureiro, although even the latter regarded both species as identical.—From *Pharm. Zeit.*, 1880, No. 70.

Action of Anæsthetics on Plants.—CLAUDE BERNARD showed that the vapor of chloroform and of ordinary ether hinder the germination of seeds, and M. Rabuteau has found that this is equally true of bromide of ethyl and of bromide of amyl. He finds also that all the ethers have the same effect. The experiments were made with cress seed; but the property of germination is merely restrained. Seeds kept for thirty-seven days exposed to the vapor of bromide of ethyl or bromide of amyl germinated, when placed under proper conditions, in two days. The question then presents itself: Have these substances a similar action upon plants which are in full progress of growth? Growing cress was exposed for two hours to an atmosphere saturated with vapor of bromide of ethyl: it then appeared feeble, the leaves hanging down, and it continued in this condition for a day or two, and then revived, but exhibited considerable retardation in its growth compared with other plants of the same age. The leaves of heliotrope become brown, and die in the course of two hours. Acetate of ethyl is somewhat less powerful. Cress lives after it has been exposed to the vapor for three hours, but does not survive an exposure of six hours. Heliotropes are only killed by an exposure of three or four hours. The action of acetate of ethyl is also correspondingly less active in animals.—*The Lancet.*

Aspidospermine and Paytine.—DR. N. WULFSBERG, assistant at the Pharmacological Institute at Göttingen, identifies Quebracho bark, from *Aspidosperma Quebracho*, with a bark which had been analyzed in 1870 by Hesse, and which was at that time only known as "Cortex Chinæ albæ de Paytan." Hesse already showed that this bark could not be a Cinchona; he discovered in it an alkaloid, which he named paytine. Flückiger, likewise, found that this bark could not be derived from a rubiaceous tree. Dr. Wulfsberg now finds that it exactly corresponds, in every respect, to Quebracho bark, and that the two alkaloids, aspidospermine and paytine, yield, on analysis, figures which make it highly probable that the two substances are identical, considering also the similarity of reaction.—*Pharm. Zeit.*, 1880, No. 72.

Comparative Value of Sulphate of Quinidine and Sulphate of Cinchonidine.—(DR. BOURRU.) The author has made careful clinical researches with reference to the extent to which the sulphate of cinchonidine may be substituted for the much more expensive sulphate of quinine in the treatment of malarial affections. He calls attention to the fact that, to act effectively it should be given from five to seven hours before the time for the occurrence of the paroxysm; departure from this rule seems to interfere with the action of cinchonidine more than with that of quinine, perhaps because the action of the former is less intense or less durable. The administration of cinchonidine is not followed by vertigo, tinnitus aurium, disturbances of vision, or any other inconvenient symptoms induced by quinine. A study of twenty-nine cases of malarial intermittent fever treated by the author with sulphate of cinchonidine, the dose varying from eight decigrams (gr. xij.) to one gram (gr. xv.) gives the following results: In sixteen cases the sulphate of cinchonidine was given alone, and cut short the fever. In ten of these cases no paroxysm occurred after the first dose. These comprised five cases of quotidian type, four of tertian, and one of quartan. In four cases, two doses were necessary before the paroxysms ceased to occur; one of these was of quotidian type, and the remaining three were of tertian. In two cases three doses were required to accomplish a cure; one of these was of quotidian type, and the other of quartan. In all these cases it was observed that the medicine failed to prevent the occurrence of the paroxysm when it was given too long, or not long enough before it. In eight cases in which quinine had previously failed, cinchonidine was successful. Three of these were of quotidian type, three were of tertian, and two were of quartan. In three other cases, quinine and cinchonidine both alike failed to effect a cure. In two cases, in which the fever was associated with inflammation of the liver and biliary passages, perhaps of malarial origin, the sulphate of cinchonidine acted very satisfactorily, seeming to affect favorably the progress of the hepatic trouble. To sum up, of twenty-seven cases of malarial intermittent fever treated with sulphate of cinchonidine, twenty-four were cured, three were not cured, resisting quinine also. Two cases of malarial intermittent fever, complicated with hepatic disturbances, were cured by the remedy.—*N. Y. Med. J.* from *Bull. Gén. de Thér.*

Detection of Glucose and Cane Syrup in Honey.—According to DR. PLANTA-REICHMAN, who writes in the *Swiss Bee Journal*, honey is now largely adulterated in that country with glucose and cane syrup. He gives, as the readiest means of detection, the following method: A solution of 20 parts of honey in 60 parts of water, when mixed with alcohol, gives a heavy white precipitate of dextrin if glucose has been added,* while natural honey only becomes milky under the same circumstances.

The safest method is to determine the sugar. The grape sugar is determined directly in a weighed quantity of honey. An equal weight of the same honey is boiled with 2% sulphuric acid, and the sugar is determined after inversion; finally the dextrin is determined in a third portion by precipitation with alcohol. The difference in the quantity of sugar found before and after inversion is so great as to furnish a certain method for distinguishing natural and artificial honey.—*The Drugg.*

Oil of Eucalyptus.—The ethereal oils of different species of eucalyptus, distilled in Australia, are gradually finding their way into medical use, after having served for some time already as perfumes. The oil of *E. citriodora* is now being used as an ingredient in soaps for the cure of certain skin-diseases.

* This is only true if the glucose contains dextrin. Several grades of glucose are made, however, one to meet the wants of confectioners, which is a thick syrup containing, aside from water, 80% of dextrin and 20% of glucose. That intended for brewers' use has 20% of dextrin and 80% of glucose, while wine-makers require a glucose quite free from dextrin.

Cacao Butter as a Coating for Pills.—M. DITTEN, apothecary at Christiania, Norway, recommends cacao butter as a coating for pills, and proceeds as follows: A small quantity of cacao butter is melted in a very flat capsule, if possible one with entirely flat bottom, the pills are quickly rolled in it, then at once thrown into a sufficient quantity of powdered starch, and allowed to cool. They will be found coated with a completely isolating, air-tight layer, which protects the mass from all influences of air and moisture, and prevents evaporation of volatile ingredients. The coating keeps well, is almost tasteless, and possesses to a certain degree the agreeable aroma of chocolate.—*Pharm. Zeit. f. Russl.* from *J. de Pharm.*

Hydrangea Arborescens as Diuretic.—DR. J. A. FLENNING highly recommends *Hydrangea arborescens* L. as a diuretic and tonic to the genito-urinary mucous membrane. He gives the fluid extract in doses of from a half to one drachm, generally in combination with other suitable remedies. He claims for it the power to diminish and even stop the excretion of albumen in Bright's disease; he also uses it with marked advantage in hæmaturia, irritable bladder and urethra, chronic gleet, etc.—*New York Med. J.*

Ung. Diachylon Hebræ.—A. BAUER sends a communication to the *Pharm. Zeitung* (1880, No. 74), in which he confirms the statement of another correspondent, namely, that Prof. Hebra, of Vienna [since deceased], has, of late, been in the habit of combining vaseline with lead-plaster, instead of linseed oil. [The combination of vaseline and lead-plaster, in about equal proportions, makes a beautiful ointment.—ED. N. R.]

Hewson's Substitute for Adhesive Plaster.—Make glue perfectly liquid by melting it with water enough to cover it, in a pot set in boiling water. When it is liquid, four parts of officinal (25%) acetic acid are to be slowly mixed with one part of it, after which a few drops of otto of roses is added to cover the smell. Put the product into a large-mouthed bottle closed with a long cork-stopper, which can be removed, in case it becomes adherent, by warming the neck of the bottle. Clean the mouth of the bottle after pouring out the mixture. Use only enough to saturate the material on which it is spread.—*Spec. and Intell.*

Mesquite Bread.—A communication was lately read before the California Academy of Sciences, written by Capt. T. A. Mellon, of the sloop "South-west," Colorado River, who furnished cans containing seed of the mesquite tree,* explaining that the screw-bean bears two crops a year, the first ripening in June, the tree being in bloom for the second crop at the same time. He had a wheel on his craft made from the wood of the screw-bean, and it acted admirably, as it did not check, and it shrinks very little, although exposed to the sun. The Indians depend mostly on the mesquite for their supply of winter's food. When the bean is ripe, they collect it in large baskets, and pack it to the nearest point on the river where there is a ledge of rocks. In all those places, they have mortars, formed by grinding into the ledge, and there the old squaws pound it up, moulding it in baskets, and drying it in the sun for winter use. Their loaves sometimes weigh twenty pounds.

When the crop is all harvested, they build a platform about three feet from the ground, and store it away until their corn, pumpkins, and melons are gone, when they draw on their mesquite bread. The beans are also used as horse feed, and at the mill it sells for three cents per pound. When there is a scarcity of hay, barley and beans are fed, and when hay is plentiful, beans and hay are the fodder.

Dr. Engelman, of the United States Forestry Commission, stated that he has just returned from the southern part of Arizona, where he found extensive woods of the mesquite tree, miles in extent and breadth, south of Tucson. There the trees were larger than is generally seen, some of them being a foot, and even two feet in diameter, and something like thirty or forty feet high. They had the aspect of the willow tree, but he compared them to the olive of Southern Europe. Straight stems were very rare, they being very much inclined to be crooked.

* *Algarobia* (*Psoralea*) *glandulosa* Torr. and Gr.

Adulteration of Essential Oils.—*Oil of Coriander.* This is extensively adulterated with colorless rectified oil of orange, which can be detected by its insolubility in 90 per cent. alcohol, in which pure oil of coriander dissolves in every proportion; equal parts of oil of orange and 90 per cent. alcohol make a turbid mixture.

Oil of Bergamot is adulterated with oil of orange. The insolubility of oil of orange, and the solubility of oil of bergamot in 90 per cent alcohol also furnishes a method of detection in this case.

Oil of Caraway is often mixed with oil of caraway chaff, which again is adulterated with turpentine. Pure oil of caraway dissolves in 90 per cent alcohol, while it forms a cloudy mixture if adulterated with turpentine. The behavior to iodine and the odor are often sufficient to prove the adulteration.

Shaker-Extract.—A nostrum which is being manufactured by J. A. White (of England?), introduced and pushed at present in Germany under this name, is stated to be prepared from: Iris versicolor, Leptandra, Stillingia, Taraxacum, Juglans, Gaultheria, Hydrastis, Actæa, Gentiana rubra, Aloe, Capsicum, Sassafras, together with borate of sodium, diluted hydrochloric acid, syrup, and water.—*Pharm. Zeit.*

Gelatin Bougies.—According to F. FRIEDRICHS, gelatin bougies may be prepared as follows: Melt together, on the water-bath, 3 parts of white gelatin, 6 parts of glycerin, and 1 part of water. If any remedial agent is ordered to be incorported, this is, if possible, dissolved in a little water, and added, under constant stirring, with a glass rod. A glass tube of proper diameter (about 3 to 5 mm.) is then selected, the interior of which is oiled, and immersed into the melted mass. By gentle suction, the tube is filled, immediately closed with the finger, and then allowed to cool, which takes but a short time. An oiled plug is then inserted into one end, and by means of a stout wire or rod, the bougie pushed out at the other end. This is then cut into pieces of appropriate length. —*Pharm. Zeit.*, 1880, No. 83.

Tar Ointment.—MR. J. B. MOORE recommends the following methods far making tar ointment as calculated to avoid the trouble and "muss" incident to the process while securing at the same time a desirable product. Three formulas are given by him, viz.: No. 1.—Lard, 3 parts; yellow wax, 1 part; and tar, 4 parts. No. 2.—Vaseline, 3 parts; yellow wax, 1 part; and tar, 4 parts. No. 3.—Cosmoline, 3 parts; yellow wax, 1 part; and tar, 4 parts.

Melt the wax, then add the lard, vaseline, or cosmoline, and when liquefied add the tar, *remove* from the fire, and stir the mixture constantly while cooling. He prefers the paraffin bases to lard. The tar used should be the pure strained tar, such as is sold in cans. When the ingredients are pure, any subsequent straining through muslin is unnecessary.

In order to clean the utensils employed, first wipe as clean as possible with paper. Then moisten a rag with *stronger* alcohol and remove the grease and resinous adhesions, and finish the operation with soap-water.—*Drug. Cir.*

To Purify Muddy Water.—Agitate each quart of water with an ounce of phosphate of lime, and allow it to settle. This requires but a few minutes and it will be found that most of the impurities are carried down to the bottom. The supernatant water can then be filtered through absorbent cotton, or ordinary cotton which has first been moistened with alcohol and then washed with water.—*Am. Journ. of Pharm.*

Useful Tables (continued from page 22).

TABLE VI.—*For converting kilograms into avoirdupois pounds.*

Kilograms.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.
0	0	2.205	4.409	6.614	8.818	11.023	13.228	15.432	17.637	19.841
10	22.046	24.251	26.455	28.660	30.864	33.069	35.274	37.478	39.683	41.887
20	44.092	46.297	48.501	50.706	52.910	55.115	57.320	59.524	61.729	63.933
30	66.138	68.343	70.547	72.752	74.956	77.161	79.366	81.570	83.775	85.979
40	88.184	90.389	92.593	94.798	97.002	99.207	101.412	103.616	105.821	108.025
50	110.230	112.435	114.639	116.844	119.048	121.253	123.458	125.662	127.867	130.071
60	132.276	134.481	136.685	138.890	141.094	143.299	145.504	147.708	149.913	152.117
70	154.322	156.527	158.731	160.936	163.140	165.345	167.550	169.754	171.959	174.163
80	176.368	178.573	180.777	182.982	185.186	187.391	189.596	191.800	194.005	196.209
90	198.414	200.619	202.823	205.028	207.232	209.437	211.642	213.846	216.051	218.255

TABLE VII.—*For converting kilograms into avoirdupois pounds and ounces.*

Kilograms.	0.		0.1.		0.2.		0.3.		0.4.		0.5.		0.6.		0.7.		0 8.		0.9.	
	lbs.	*oz.*	*lbs.*	*oz.*	*lbs.*	*oz.*	*lbs.*	*oz.*	*lbs.*	*oz.*	*lbs.*	*oz.*	*lbs.*	*oz.*	*lbs.*	*oz.*	*lbs.*	*oz*	*lbs.*	*oz.*
0	0	0.0	0	3.5	0	7.1	0	10.6	0	14.1	1	1.6	1	5.2	1	8.7	1	12.2	1	15.7
1	2	3.3	2	6.8	2	10.3	2	13.9	3	1.4	3	4.9	3	8.4	3	12.0	3	15.5	4	3.0
2	4	6.5	4	10.1	4	13.6	5	1.1	5	4.7	5	8.2	5	11.7	5	15.2	6	2.8	6	6.3
3	6	9.8	6	13.3	7	0.9	7	4.4	7	7.9	7	11.5	7	15.0	8	2.5	8	6.0	8	9.6
4	8	13.1	9	0.6	9	4.1	9	7.7	9	11.2	9	14.7	10	2.3	10	5.8	10	9.3	10	12 8
5	11	0.4	11	3.9	11	7.4	11	11.0	11	14.5	12	2.0	12	5.5	12	9.1	12	12.6	13	0.1
6	13	3.6	13	7.2	13	10.7	13	14.2	14	1.8	14	5.3	14	8.8	14	12.3	14	15.9	15	3.4
7	15	6.9	15	10.4	15	14.0	16	1.5	16	5.0	16	8.6	16	12.1	16	15.6	17	3.1	17	6.7
8	17	10.2	17	13.7	18	1.2	18	4.8	18	8.3	18	11.8	18	15.4	19	2.9	19	6.4	19	9.9
9	19	13.5	20	1.0	20	4.5	20	8.0	20	11.6	20	15.1	21	2.6	21	6.2	21	9.7	21	13.2
10	22	0.7	22	4.3	22	7.8	22	11.3	22	14.8	23	2.4	23	5.9	23	9.4	23	13.0	24	0.5
11	24	4.0	24	7.8	24	11.1	24	14.6	25	2.1	25	5.6	25	9.2	25	12.7	26	0.2	26	3.8
12	26	7.3	26	10.8	26	14.3	27	1.9	27	5.4	27	8.9	27	12.4	28	0.0	28	3.5	28	7.0
13	28	10.6	28	14.1	29	1.6	29	5.1	29	8.7	29	12.2	29	15.7	30	3.2	30	6.8	30	10.3
14	30	13.8	31	1.4	31	4.9	31	8.4	31	11.9	31	15.5	32	3.0	32	6.5	32	10.0	32	13.6
15	33	1.1	33	4.6	33	8.2	33	11.7	33	15.2	34	2.7	34	6.3	34	9.8	34	13.3	35	0.9
16	35	4.4	35	7.9	35	11.4	35	15.0	36	2.5	36	6.0	36	9.5	36	13.1	37	0.6	37	4.1
17	37	7.7	37	11.2	37	14.7	38	2.2	38	5.8	38	9.3	38	12.8	39	0.3	39	3.9	39	7.4
18	39	10.9	39	14.5	40	2.0	40	5.5	40	9.0	40	12.6	41	0.1	41	3.6	41	7.1	41	10.7
19	41	14.2	42	1.7	42	5.3	42	8.8	42	12.3	42	15.8	43	3.4	43	6.9	43	10.4	43	13.9
20	44	1.5	44	5.0	44	8.5	44	12.1	44	15.6	45	3.1	45	6.6	45	10.2	45	13.7	46	1.2

TABLE VIII.—*For converting kilograms into avoirdupois ounces.*

Kilograms.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.
0	0	35.3	70.5	105.8	141.1	176.4	211.6	246.9	282.2	317.5
10	352.7	388.0	423.3	458.6	493.8	529.1	564.4	599.7	634.9	670.2
20	705.5	740.7	776.0	811.3	846.6	881.8	917.1	952.4	987.7	1022.9
30	1058.2	1093.5	1128.8	1164.0	1199.3	1234.6	1269.8	1305.1	1340.4	1375.7
40	1410.9	1446.2	1481.5	1516.8	1552.0	1587.3	1622.6	1657.9	1693.1	1728.4
50	1763.7	1799.0	1834.2	1869.5	1904.8	1940.0	1975.3	2010.6	2045.9	2081.1
60	2116.4	2151.7	2187.0	2222.2	2257.5	2292.8	2328.1	2363.3	2398.6	2433.9
70	2469.2	2504.4	2539.7	2575.0	2610.2	2645.5	2680.8	2716.1	2751.3	2786.6
80	2821.9	2857.2	2892.4	2927.7	2963.0	2998.3	3033.5	3068.8	3104.1	3139.4
90	3174.6	3209.9	3245.2	3280.4	3315.7	3351.0	3386.3	3421.5	3456.8	3492.1

TABLE IX.—*For converting avoirdupois ounces into grams.*

Av. ounces.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.
0	0	28.3	56.7	85.0	113.4	141.7	170.1	198.4	226.8	255.1
10	283.5	311.8	340.2	368.5	396.9	425.2	453.6	481.9	510.3	538.6
20	567.0	595.3	623.7	652.0	680.4	708.7	737.1	765.4	793.8	822.1
30	850.5	878.8	907.2	935.5	963.8	992.2	1020.6	1048.9	1077.3	1105.6
40	1134.0	1162.3	1190.7	1219.0	1247.4	1275.7	1304.1	1332.4	1360.8	1389.1
50	1417.5	1445.8	1474.2	1502.5	1530.9	1559.2	1587.6	1615.9	1644.3	1672.6
60	1701.0	1729.3	1757.7	1786.0	1814.4	1842.7	1871.1	1899.4	1927.8	1956.1
70	1984.5	2012.8	2041.2	2069.5	2097.9	2126.2	2154.6	2182.9	2211.3	2239.6
80	2268.0	2296.3	2324.7	2353.0	2381.4	2409.7	2438.1	2466.4	2494.8	2523.1
90	2551.5	2579.8	2608.2	2636.5	2664.9	2693.2	2721.6	2749.9	2778.3	2806.6

BIBLIOGRAPHY.

A PRACTICAL TREATISE ON SURGICAL DIAGNOSIS. Designed as a Manual for Practitioners and Students. By AMBROSE L. RANNEY, A.M., M.D., etc. Second Edition, Enlarged and Revised. New York: Wm. Wood & Co., 1880, 8vo, pp. 471.

SINCE the publication of the first edition, the work has undergone extensive revision, and additional matter has been added, consisting mainly, we are given to understand, of descriptive text to accompany the tables showing the contrast of symptoms. There is no work with which we are acquainted that places before the reader so graphic a method of diagnosis on so extended a scale, and there is little doubt that its favorable reception thus far has been based on the fact of its being a really useful addition to the library of the student and the general practitioner.

CONTRIBUTIONS TO OPERATIVE SURGERY AND SURGICAL PATHOLOGY. By J. M. CARNOCHAN, M.D., etc. With Illustrations drawn from Nature. New York: Harper Brothers, 1877–80, Parts I.–VI., pp. 228 (inclusive), 4to.

MUCH of the matter herein contained has already appeared in other publications by the author. Some of the papers, however, possess such general interest for surgeons that their reproduction in the present form will be acceptable. Among these may be noted the following: "Elephantiasis Arabum of the Lower Extremity Successfully treated by Ligature of the Femoral Artery, with Other Cases," "Elephantiasis Arabum of the Head, Face, and Neck Treated Successfully by Ligature of both Common Carotid Arteries," "Remarks on the Ligation of the Common Trunk of the Femoral Artery, in Relation to Secondary Hemorrhage, Following Amputation of the Thigh; and in Hemorrhage from Wounds of the Plantar Arteries, and of the Posterior and Anterior Tibial Arteries, with Cases;" "Amputation of the Entire Lower Jaw for Ostitis, Necrosis and Caries, etc."

Up to this point the author follows the ground laid out for the work in the prospectus, but on entering upon the consideration of the subject of "Shock and Collapse, and the Primary Treatment of Injuries, including the Consideration of the time of Election for Capital Operations required after Extensive Lesions," he abandons the original plan, and amplifies the consideration of this topic through the two succeeding fasciculi, with the promise of completing it in Part VII. While the latter subject is unquestionably an important one, its consideration at such length in a work of this character is, we think, an error, and it is our belief that the author would meet the wishes of medical readers, and greatly enhance the value of his labors, if he would confine himself more closely to the plan originally proposed.

As a piece of book-work, this is truly sumptuous; such paper, press-work, typography, and illustrations being rarely met with in medical publications.

MINOR SURGICAL GYNÆCOLOGY. A Manual of Uterine Diagnosis and the Lesser Technicalities of Gynæcological Practice for the Use of the Advanced Student and General Practitioner. By PAUL F. MUNDÉ, M.D., etc. With Three Hundred Illustrations. New York: Wm. Wood & Co., 1880 [Wood's Library of Standard Medical Authors], 8vo, pp. 381.

THIS is a book likely to be of as great practical value to the class of readers for whom it has been written as any one of the systematic treatises on gynæcology in our language that have preceded it. In the latter, the necessity for devoting much attention to the pathology and diagnosis of the graver forms of diseases of the uterus and appendages, has necessarily led to the exclusion of many details relating to minor subjects, yet these are the very ones upon which the general practitioner requires instruction, and a familiarity with them will enable him to avoid many mistakes in diagnosis and treatment that are liable to be made by those who depend on the text-books heretofore available.

CARLSBAD AND ITS NATURAL HEALING AGENTS, from the Physiological and Therapeutical Point of View. By J. KRAUS, M.D., etc. With Notes and Introductory by REV. JOHN T. WALTERS, M.A., etc. Second Edition, Revised and Enlarged. London: Trubner & Co., 1880, 8vo, pp. 103.

THOSE who desire to become as familiar as possible with the nature of the alkaline thermal waters of the locality, without making a journey to the Carlsbad, will find this handsome little book by Dr. Kraus of the greatest assistance to them. It would perhaps have been better for the popularity of the work among medical readers if the introductory notes had been contributed by a medical man rather than a clergyman, since the profession to which he belongs has rather an unenviable notoriety for a habit of bestowing the most flattering indorsements upon the remedies (*sic*) which are least worthy of confidence. In the present instance the introducer does worse, since he goes rather out of his way to malign the medical profession of his own country. However, the merits of the Carlsbad springs are well known, and, thanks to the medical profession of England, as elsewhere, are often of great service to a multitude of sufferers.

FOOD FOR THE INVALID; THE CONVALESCENT, THE DYSPEPTIC, AND THE GOUTY. By J. MILNER FOTHERGILL, M.D. Edin., etc.; and HORATIO C. WOOD, M.D., etc. New York: Macmillan & Co., 1880, 8vo, pp. 157. $1.00.

THIS excellent little work is dedicated "To the Shade of Edward Gibbon, the Historian, whose Gastronomic Proclivities have Preserved for us the Feasts of Ancient Rome." The introductory remarks by Dr. Fothergill partake of the felicity which characterizes all that he writes. The contents relates to the "Invalid in Bed," "Nursery Food," and of "Food in General," and 298 chosen recipes are given for things which may tempt the palate, or which will nournish vitality with the least expenditure of forces. It is suggested in the prefatory note that by marking such recipes as a physician may deem desirable, and leaving the book with the nurse, time may be saved, and a full dietary be provided for his patient.

A COMPENDIUM OF MODERN PHARMACY AND DRUGGISTS' FORMULARY. By WALTER B. KILNER, Springfield, Ill. 1880, 8vo, pp. 478.

THIS partakes more of the nature of a formulary than of a treatise on pharmacy, but it is very comprehensive—in some departments, indeed, remarkably so. Following a brief introduction on weights and measures, the compiler gives 80 formulas for tinctures; details respecting the preparation of 42 drugs according to eclectic methods; 53 formulas for essences, 113 formulas of elixirs, 32 solutions, 44 fluid extracts, 21 flavoring extracts, 45 soda-water syrups, 34 medicated syrups, 14 infusions and medicated waters; 13 emulsions, 100 miscellaneous prescriptions for various diseases [this looks too much like encouraging the practice of counter-prescribing to be commendable.—ED. N. R.], 46 liniments, 32 varieties of pills, 16 medicated wines, 6 mineral waters, 17 explosive mixtures, 35 veterinary prescriptions, 78 formulas for perfumery, 30 hair-dyes and -tonics, 25 pomades, 13 hair-oils, 20 dentifrices, 10 cold-creams and cosmetics of similar nature, 24 toilet waters, 17 sachets, etc., 21 toilet soaps, etc., 20 wines and liquors, 13 prepared wines (mostly made with cider), 4 "family" wines, 50 poisons and antidotes therefor, 113 miscellaneous formulas, and general directions for the removal of stains and grease spots. We have been thus explicit in detailing the contents, in order to show the very extended scope of the work.

A feature of the work consists of the supplements which the editor contemplates issuing every ninety days, and which are to be sent free, for twelve months, to all who purchase the volume. The first one of these, which is also at hand, contains 44 pages, and brings the number of

elixirs up to 210, and the miscellaneous formulas up to 138. We regret that the compiler has not given the authorities for the various formulas.

The book is handsomely published, and is of very convenient size for reference.

THE DRUGGISTS' POCKET PRICE-BOOK FOR WHOLESALERS, RETAILERS, AND TRAVELLING SALESMEN. By JOHN H. NELSON. Cleveland, O.: John H. Nelson, 1880.

THIS is a decided improvement upon the former edition of the same work, owing to its more convenient form. To accomplish this change, some transpositions of matter have been made, and, with the aid of marginal indices, reference to the contents is rendered very simple and easy. Part I. embraces Drugs, Medicines, Chemicals, etc.; Part II. contains titles of Paints, Oils, Colors, and Varnishes; Part III., Ales, Wines, and Liquors; Part IV., Patent Medicines, Proprietary Articles, and Druggists' Sundries. The whole is followed by a general index.

VENNOR'S ALMANAC AND WEATHER RECORD FOR 1880–81. New York: American News Co., 1880, pp. 96. 25c.

IN view of the accuracy with which Mr. Henry C. Vennor, of Montreal, has for four years predicted the weather-changes, we can recommend this work to the attention of those who wish to be prepared for the vicissitudes of our climate. Besides the forecasts above referred to, the book contains the usual calendar, feast and fast days, together with weather proverbs and short articles on meteorology in general.

VORSCHLÆGE ZUR ABÆNDERUNG DER ERSTEN AUSGABE DER PHARMACOPŒA GERMANICA. Gesondert und Geordnet vom Kaiserlichen Gesundheitsamte. Erster (Allgemeiner) Theil, fol. Berl., 1880 (Reichsdruckerei) x., 164 pp. Zweiter (Specieller) Theil, fol. ib., xii., 691 pp.

(Proposed Alterations of the first Edition of the Pharmacopœia Germanica. Collected and arranged by the Imperial Health Department. Part I. (General Principles). Part II. (Text).

WE owe a copy of this important publication, which comprises all that has heretofore been written as criticism or amendment to the first edition of the German Pharmacopœia, to the kindness of one of the members of the Committee of Revision, namely, Dr. Christian Brunnengräber, of Rostock. In our next number we shall notice the work more in detail.

OPHTHALMIC AND OTIC MEMORANDA. By D. B. ST. JOHN ROOSA, M.D., Professor of Ophthalmology in University of the City of New York, etc.; and EDWARD T. ELY, M.D., Assistant to the Chair of Ophthalmology, Univ. of the City of New York, etc. Revised Edition. New York: Wm. Wood & Co., 1880, 12mo, pp. 298.

THIS little work has, we believe, met with a very extensive sale in former editions, its value consisting in its serving as a convenient dictionary to ophthalmology, rather than a text-book. To render it more complete, a considerably amount of matter has been added, and portions have been rewritten.

CUTANEOUS AND VENEREAL MEMORANDA. By HENRY G. PIFFARD, A.M., M.D., Professor of Dermatology, Univ. of the City of New York, etc.; and GEORGE HENRY FOX, A.M., M.D., Surgeon to the New York Dispensary, etc. Second Edition. New York: Wm. Wood & Co., 1880, 12mo, pp. 309.

THE work has undergone but slight modifications to fit it for republication; some few changes in nomenclature and the addition of a few formulas being the most important.

SUGAR ANALYSIS: A Description of the Methods Used in Estimating the Constituents. By M. BENJAMIN, PH.B., Member of the Chem. Soc. of New York, Paris, and Berlin, etc. New York, 1880, 8vo, pp. 18.

ILLUSTRIRTER WEINBAU-KALENDER für das Jahr 1881. Herausgegeben von A. W. FREIHERRN v. BABO, Director der k. k. œnologischen u. pomologischen Lehranstalt in Klosterneuburg. Redigirt von Chemiker F. KURMANN.

(Illustrated Calendar for Viniculture, published by A. W. Baron v. Babo, Director of the Œnological and Pomological Institute at Klosterneuburg, Austria.)

CONFERENCIAS dadas en la Academia Médico-Farmacéutica de Barcelona sobre GENERALIDADES DE LOS TUMORES ú ONCOLOGIA. Po el DR. D. SALVADOR BADIA. 8vo, Barcelona, 1880.

NEW BOOKS.

Enciclopedia di Chimica scientifica e industriale; ossia Dizionario generale di Chimica, colle Applicazioni all' agricultura ed industrie agronomiche, alla Farmacia e Materia Medica, etc. Opera originale diretta da Francesco Selma. 4to, in 168 numbers. *Just completed.* Turin. Each, lire 1.50.

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Watson (Wm. H.). Science Teachings in Living Nature. A Popular Introduction to the Study of Physiological Chemistry and Sanitary Science. 12mo, pp. 160. London. 3*s.* 7*d.*

Heppe (G.). Katechismus der Droguenkunde. 30 illust. 8vo. Leipzig. 2*m.* 50*d.*

Opwyrda (R. J.). Handleiding voor Adsistenten in de Apotheek. 8vo, pp. 185. Amsterdam. fl. 1.90 c.

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Bolley's Handbuch der technisch-chemischen Untersuchungen. 5te Aufl. v. C. Stahlschmidt. 2te Aufl., 66 illust., 8vo, pp. 972. 22 marks.

Koehler (Herm.). Aerztliches Recept-Taschenbuch. 8vo, pp. 291. Leipzig. 4*m.*

Trousseau y Reveil. Tratado completo del Arte de recetar. Nueva Edicion por Lorenzo y Corral. 8vo, pp. 432. Madrid. 24*r.*

Farmaceutisk Stat 1770–1879. Udgivet af C. A. Jordening of V. L. Seehausen. Kjobenhavn. 4 kr.

Limousin (S.). Contributions à la Pharmacie et à la Thérapeutique. 8vo, pp. 337. Paris.

Ricci (A.). Sulla Farmacia; cenni storici. 16mo, pp. 16. Milan.

Tomasini (A.). Atlante di Tossicologia. gr. fol. Milan (Manini).

Yvon (P.). Nouvel Appareil pour le dosage de l'Urée. 8vo, pp. 8. Paris.

Armstrong (H. E.). Introduction to the Study of Organic Chemistry. 2d ed., 12mo. London. 3*s.* 6*d.*

TRADE NOTES.

Chase's Liquid Glue is a newly issued preparation of this useful substance. It is recommended as a cement for "wood, glass, crockery, jewelry, ornaments, and leather," and is claimed to be unsurpassed in tenacity by any cement or glue in existence. The bottles (2 oz.) are provided with tin caps and brushes; are handsomely labeled, and the odors of the glue and its solvent are disguised with that of hydrocyanic acid. JOSHUA S. CHASE, of Boston, is the manufacturer.

YOUNG & SMYLIE, of Brooklyn, well-known manufactures of licorice preparations, have brought out a form well adapted for use as a demulcent. It consists of thoroughly purified extract, free from extra gloss or glazing, of lenticular shape, each flattened pellet being of about the general appearance of a small water-melon seed, but less elongated. They are of very agreeable flavor, and much better adapted for use than the sticks formerly sold. They are packed in 5 lb. boxes with show-card, and in 32 and 60 lb. box cases.

MR. ELI LILLY, of Indianapolis, Ind., has associated with himself Messrs. James E. Lilly and Evan F. Lilly; and the firm will in future be known as ELI LILLY & COMPANY.

MR. WARREN B. GARDINER, of the well-known firm of LAZELL, MARSH & GARDINER, at No. 10 Gold st., has retired from the copartnership. The remaining partners continue to carry on the business under the old firm name.

PARKE, DAVIS & Co., of Detroit, have opened a branch store in New York, for the convenience of patrons living in this locality. They intend to keep in stock a full line of all goods mentioned in their price-list.

ACKERMAN BROS., of 317 and 319 W. 44th st., N. Y., are putting up in handsome glass jars, securely sealed, an excellent specimen of Roasted and Ground Coffee, which is recommended to apothecaries as a very superior article from which to manufacture coffee flavor. It is known as **Café des Gourmets**, and we can say without reservation that, after using it as a beverage for over eighteen months, we are better pleased with its flavor than with that of any coffee, mixed, or otherwise, that we have tried. It retails for 40 cents per pound bottle, and less is required than in the case of coffee purchased in bulk.

Now is the time to lay in a stock of the attractive **Paas Dyes** for Easter eggs, prepared and sold by WILLIAM M. TOWNLEY, of Newark, N. J. The dyes are put up in neat boxes containing sample eggs, and bits of worsted, silk, feathers, etc., to show the results of using them. Eggs that have been thus dyed can be eaten without fear of poisoning. Every one who had a stock of the dyes last year appears to have sold it out completely.

Professor Alphonso Wood, of the New York College of Pharmacy, died at his home in West Farms, this city, on the 4th of January. He has been succeeded as Instructor in Botany in the summer course, by Mr. J. Schrenk.

Sulphate of Hyoscyamia.—Some time ago we announced that the firm of Gehe & Co. had put upon the market a soluble salt of hyoscyamia, namely, the sulphate, which will enable *neutral aqueous* hypodermic solutions of this important new remedy to be prepared without trouble and of any strength. We are now informed by Messrs. McKesson & Robbins that they have received an invoice of this salt and we would recommend practitioners of medicine to employ the sulphate hereafter in preference to the alkaloid itself, which is much less soluble.

CORRESPONDENCE.

THE ADULTERATION OF FOOD AND DRUGS.

As the passage of a proper national law for the prevention of the adulteration, etc., of food and drugs is a consummation devoutly to be wished, we are sorry to notice certain imperfections in the bill recommended by the National Board of Trade and presented for the consideration of Congress, its defects being serious enough to imperil its passage. Thus, no precautions necessary to insure the appointment of properly qualified examiners are laid down. Sec. 4 is so drawn as to impair the efficiency of the measure by providing that the Collector of Customs shall designate the public analyst whose decision shall settle finally any case of protest. Sec. 8 is very loosely drawn. It in fact prohibits the importation of cinchona barks containing less of the alkaloids than the pharmacopœia prescribes; of opium containing less than 10% of morphine, and, when the new pharmacopœial standard shall have been established, of opium containing either more or less than 10% of morphine; of all commercial chemicals in cases where the same chemicals, but with higher standards of purity, are used in medicine, etc. It makes any article of food which has been colored, or coated, or polished, or powdered, so as to make it *appear better than it really is*, an "adulterated food," under the act, without reference to the price charged for it, or the name under which it may be sold, and without regard to whether or not there is any intent to deceive. To be sure, the National Board of Health is called upon to declare from time to time "certain articles or preparations" to be exempt from the provisions of the act, but the bill does not give us any idea of what kind of article might or should be made exempt. The proposed law in one place recognizes the standards of the U. S. Pharmacopœia and in another annuls the recognition by giving the the National Board of Health the authority to "fix the limits of variability permissible in any article or compound." The definitions in Sec. 10, as given, are unnecessary. To say that "the term drugs shall include all medicines for internal or external use" is like saying that *the term painter's colors shall include all paints used for painting*. Sec. 11 is extraordinary and unnecessary. Sec. 12 should read: That this act shall take effect ninety days after its passage. Finally, it is important to add the usual repealing clause referring to any previous legislation inconsistent with this act.

As the National Board of Health is constituted, it would seem that the proposed law should prescribe the manner of appointing the Special Examiners of Food and Medicine, and also require the Board to consult the chemists and pharmacists in regard to the rules and regulations which are to govern the conduct of the examinations to be made by these Examiners, for under the law constituting the National Board of Health there is not likely to be a professional chemist or pharmacist among the whole membership at any time. No one will doubt that the Board, as now constituted, would do all in their power, according to the best of their judgment, to carry out the provisions of the law in a proper manner, and it is quite probable that the Board would adopt some plan essentially similar to that prescribed in the substitute for the bill under consideration, which is presented below, but it would be wise to make the law somewhat more explicit when this can be done without disadvantage.

As the colleges and associations chiefly interested will probably not have time to meet and discuss the subject, the following substitute is offered for consideration.

O. O.

[For the sake of comparison, we publish the text of the bill proposed by the National Board of Trade in the adjoining columns.—ED. N. R.

BILL PROPOSED BY "O. O."

To Prevent the Adulteration of Food and Medicine.

(Offered as a substitute for that recommended by the National Board of Trade.)

Be it enacted, etc.

That no person or corporation shall knowingly transport, or cause to be transported, from any foreign country into any port of the United States, nor from any State, District, or Territory of the United States into any other State, District, or Territory thereof, for sale or barter, or to be offered for sale or barter, any article of food or medicine adulterated within the meaning of this act.

SEC. 2. That no person shall, within the District of Columbia, or in any of the Territories of the United States, or in any fort, arsenal, dockyard, reservation, or other place under the jurisdiction of the United States, manufacture, offer for sale, or sell or barter any article of food or medicine adulterated within the meaning of this act.

SEC. 3. That all articles of food or medicine imported from abroad shall, before passing the custom-house, be examined in reference to their kind, quality, and purity, all such examinations to be made under the direction of the National Board of Health, by the Special Examiners of Food and Medicine, to be appointed as hereinafter provided; and if any article of food or medicine so examined shall be found in the opinion of the Examiner to be adulterated within the meaning of this act, a return to that effect shall be made upon the proper invoice, and any article so returned shall not pass the custom-house or be delivered to the consignee or consignees, except under the circumstances and upon the conditions prescribed in Sec. 4 of this act.

SEC. 4. That the owner or consignee shall at all times, when dissatisfied with the return of the Special Examiner of Food and Medicine, have the privilege of calling for a re-examination at his own expense, on depositing with the Collector of Customs such sum as that officer may deem sufficient to defray the expense thereof, and it shall be the duty of the Collector of Customs in such case to cause to be made, by a public analyst to be designated by the National Board of Health, a careful re-examination of the article in question, the result of such re-examination to be certified under oath by the said public analyst, and the certificate so rendered shall govern the final decision as to whether the article examined is or is not adulterated within the meaning of this act; and in case the said article shall, by the certificate of the public analyst, be declared to be not adulterated within the meaning of this act, it shall then be delivered to the owner or consignee and passed without reservation, upon the payment of the duties if any; but if the article shall by the said certificate of re-examination be declared to be adulterated within the meaning of this act, it shall not be delivered to the owner or consignee, but shall be forfeited and shall remain in the custody of the Collector of Customs until disposed of in accordance with such rules and regulations as may be prepared for that purpose by the National Board of Health and approved by the Secretary of the Treasury. *Provided*, however, that the owner or consignee, on payment of the charges of storage and other expenses necessarily incurrred by the United States, and on giving a bond with sureties satisfactory to the Collector, agreeing to land the article or articles out of the limits of the United States, shall have the privilege of re-exporting said article or articles at any time within six months after the date of the certificate of re-examination.

SEC. 5. That in order to carry into effect the provisions of this act, there shall be appointed by the Secretary of the Treasury such number of Special Examiners of Food and Medicine, not to exceed twenty, as may in his opinion be necessary, one of the said examiners to serve at Washington, D. C., and the others at the principal ports of entry where food and medicines are customarily imported.

SEC. 6. That no person shall be appointed a Special Examiner of Food and Medicine unless he shall have

BOARD OF TRADE BILL

To Prevent the Adulteration of Food or Drugs.

Be it enacted, etc., That no person or corporation shall knowingly transport, or cause to be transported from the State, district, or territory in which he resides or does business into any other State or territory, or from any foreign country, or other State or territory, into the State or territory in which he resides or does business, for sale or barter, or to be offered for sale or barter, any article of food or drugs adulterated within the meaning of this act, and any person violating the above provision shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined not more than fifty dollars for each offence.

SEC. 2. That no person shall, within the District of Columbia, or in any of the territories, or in any fort, arsenal, dock-yard, or reservation, or other place under the jurisdiction of the United States, manufacture, offer for sale, or sell any article of food or drugs which is adulterated within the meaning of this act; and any person violating this provision shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine not exceeding fifty dollars.

SEC. 3. If, on examination of any article of food or drugs imported from any foreign country, it is found to be adulterated within the meaning of this act, a return to that effect shall be made upon the invoice, and articles so noted shall not be permitted to pass the custom-house, or be delivered to the consignees unless on re-examination, as provided for in this act, it shall be found that the said articles are not adulterated.

SEC. 4. The owner or consignee shall have the privilege of calling, at his own expense, for a re-examination; and on depositing with the collector of customs such sum as he may deem sufficient to defray such expense, it shall be the duty of the collector of customs to procure a certificate, under oath, from a public analyst, of a careful analysis of the articles in question; and in case the report by certificate of the analyst shall declare the report of the officer who examined the goods to be erroneous, and the said articles to be unadulterated, the said articles shall be returned to the owner or consignee, and passed without reservation on payment of the duties, if any. But in case the officer's return shall be sustained by the analyst, the said articles shall remain in charge of the collector of customs, to be disposed of in accordance with regulations to be prepared by the National Board of Health, and approved by the Secretary of the Treasury: *Provided*, That the owner or consignee, on payment of charges of storage, and other expenses necessarily incurred by the United States, and on giving bond, with sureties satisfactory to the collector, agreeing to remove said articles from the United States, shall have the privilege of re-exporting them at any time within the period of six months after the date of the report of the inspector or public analyst.

SEC. 5. In order to carry into effect the provisions of this act, the Secretary of the Treasury is hereby authorized to appoint from names submitted to him for that purpose by the National Board of Health one or more suitably qualified persons as special inspectors and as public analysts for adulterated food and drugs at such ports of entry as the Secretary of the Treasury may deem expedient, and it shall be the duty of the National Board of Health to prepare instructions governing the work of such inspectors and analysts which, when approved by the Secretary of the Treasury, shall govern their action, and that of collectors of customs, in preventing importation from foreign countries of food or drugs adulterated within the meaning of this act.

SEC. 6. The National Board of Health shall make, or cause to be made, examination of specimens of food and drugs collected under its direction in various parts of the country, and shall publish in its weekly bulletin the results of such analyses. If it shall appear from such examination that any of the provisions of this act have been violated, the Secretary of the Board shall at once report

[Proposed Bill—Continued.]

satisfactorily passed a theoretical and practical examination into chemistry, pharmacognosy, and such other professional qualifications as may in the opinion of the National Board of Health be deemed requisite for the proper performance of his duties under this act, said examination to be conducted by a Board of Experts consisting of three chemists and two pharmacists possessing the confidence of the Colleges of Medicine and Pharmacy, and appointed by the Secretary of the Treasury upon the recommendation of the National Board of Health, who shall receive compensation at the rate of ten dollars per day, and their actual and necessary travelling expenses when engaged in the actual performance of their duties under this act, by the request of the National Board of Health. *Provided*, however, that the total amount paid under this section shall in no case exceed two thousand dollars per annum.

SEC. 7. That the National Board of Health shall, after consultation with the Board of Experts appointed in accordance with the preceding section, prepare such rules and regulations as may be deemed necessary to carry out the provisions of this act, which rules and regulations, when approved by the Secretary of the Treasury, shall govern the official duties and actions of the Special Examiners of Food and Medicine, and those of the officers of the Customs Revenue in preventing the importation from foreign countries of food and drugs adulterated within the meaning of this act.

SEC. 8. That it shall be the duty of the Special Examiners of Food and Medicine to examine any specimen or specimens of food or drugs submitted to them by the National Board of Health for examination, and the said Board shall cause to be collected in various parts of the United States specimens of articles of food or medicine offered for sale or sold or bartered, and shall cause the same to be examined, the results of such examinations to be published in the Weekly Bulletin of the National Board of Health, and any violation of the provisions of this act that may be discovered by or brought to the attention of the Board, if confirmed by the result of examination by a Special Examiner, shall be at once reported to the proper United States District Attorney who shall be furnished with a sworn statement by the Special Examiner of the results of the examination made by him.

SEC. 9. [Same as Sec. 7 in the bill proposed by the National Board of Trade.]

SEC. 10. That any article of food shall be deemed adulterated within the meaning of this act:

1. Whenever any substance has been mixed with it so as to reduce or injuriously affect its quality or strength.

2. Whenever any inferior or cheaper substance has been substituted wholly or in part for the article.

3. Whenever any valuable constituent properly belonging to it as an article of food has been wholly or in part abstracted from it.

4. Whenever it is an imitation of and sold under the name of another article.

5. Whenever sold under any name which is intended to deceive the public as to the kind of substance of which the article consists.

6. Whenever the article consists wholly or in part of a diseased or decomposed, putrid, rotten, or infected animal or vegetable substance, whether manufactured or not; or, in the case of milk, whenever it has been taken from a diseased animal.

7. Whenever it is colored, or coated, or polished, or powdered, or otherwise treated for the purpose of concealing damage, or for the purpose of deceiving purchasers by making the article appear to be better or of greater value than it really is.

8. Whenever it contains any added poisonous ingredient which may render the article injurious to the health of any person who may consume it.

Provided, however, that the provisions of this act shall not apply to mixtures or compounds recognized as ordinary articles of food, provided the same are distinctly

[Board of Trade Bill—Continued.]

the facts to the proper United States district attorney, with a copy of the results of the analysis duly authenticated by the analyst under oath.

SEC. 7. It shall be the duty of every district attorney to whom the Secretary of the National Board of Health, or any collector of customs shall report any violation of this act, to cause proper proceedings to be commenced and prosecuted without delay for the fines and penalties in such case provided, unless, upon inquiry and examination, he shall decide that such proceedings cannot probably be sustained, in which case he shall report the facts to the National Board of Health; and for the expenses incurred and services rendered in all such cases, the district attorney shall receive and be paid from the Treasury such sum as the Secretary of the Treasury shall deem just and reasonable, upon the certificate of the judge before whom such cases are tried or disposed.

SEC. 8. An article shall be deemed to be adulterated within the meaning of this Act—

a.—In the case of drugs.

1. If, when sold under or by a name recognized in the United States Pharmacopœia, it differs from the standard of strength, quality, or purity laid down therein.

2. If, when sold under or by a name not recognized in the United States Pharmacopœia, but which is found in some other pharmacopœia or other standard work on Materia Medica, it differs materially from the standard of strength, quality, or purity laid down in such work.

3. If its strength or purity fall below the professed standard under which it is sold.

b.—In the case of food or drink.

1. If any substance or substances has or have been mixed with it so as to reduce or lower or injuriously affect its quality or strength.

2. If any inferior or cheaper substance or substances have been substituted wholly or in part for the article.

3. If any valuable constituent of the article has been wholly or in part abstracted.

4. If it be an imitation of or be sold under the name of another article.

5. If it consist wholly or in part of a diseased, or decomposed, or putrid, or rotten animal or vegetable substance, whether manufactured or not, or in the case of milk, if it is the produce of a diseased animal.

6. If it be colored or coated, or polished or powdered, whereby damage is concealed, or it is made to appear better than it really is, or of greater value.

7. If it contain any added poisonous ingredient, or any ingredient which may render such article injurious to the health of a person consuming it: *Provided*, That the National Board of Health may, with the approval of the Secretary of the Treasury, from time to time declare certain articles or preparations to be exempt from the provisions of this act: *And provided further*, That the provisions of this act shall not apply to mixtures or compounds *recognized* as ordinary articles of food, provided that the same are not injurious to health, and that the articles are distinctly labelled as a mixture, stating the components of the mixture.

SEC. 9. It shall be the duty of the National Board of Health to prepare and publish from time to time lists of the articles, mixtures, or compounds declared to be exempt from the provisions of this act, in accordance with the preceding section. The National Board of Health shall also from time to time fix the limits of variability permissible in any article or compound.

SEC. 10. The term "food" as used in this act shall include every article used for food or drink by man.

The term "drug" as used in this act shall include all medicines for internal or external use.

SEC. 11. All the regulations and declarations of the National Board of Health, made under this act from time to time and promulgated, shall be printed in the Statutes-at-Large.

SEC. 12. This act shall take effect ninety days after it shall have become a law.

[Proposed Bill—Continued.]

labeled as mixtures or compounds, and provided they are not injurious to health. And *provided*, further, that the National Board of Health shall be authorized, with the approval of the Secretary of the Treasury, to exempt from time to time from the operations of this act such articles of food, not injurious to health, as may in their opinion be properly made exempt without defeating thereby the object of this act; lists of the articles so exempted to be published from time to time by the National Board of Health.

SEC. 11. That the National Board of Health shall from time to time fix the limits of variability permissible in any article of food.

SEC. 12. That the term "food" as used in this act shall be held to include any and every article or compound used for food or drink for man, or entering into the composition of, or used as a condiment with, the food of man.

SEC. 13. That any article of medicine shall be held to be adulterated within the meaning of this act:

1. Whenever, being sold under or by the name recognized in the pharmacopœia of the United States, it varies as to kind, quality, purity, or strength from the standards prescribed therein.

2. Whenever any other substance has been substituted wholly or in part for it.

3. Whenever any valuable constituent properly belonging to it as an article of medicine has been wholly or in part abstracted from it.

4. Whenever it is an imitation of and sold under the name of another article.

5. Whenever sold under any name which is intended to deceive the purchaser or consumer as to the kind or standard quality of its constituent or constituents.

6. Whenever its kind, quality, purity, or strength falls below the professed standard under which it is sold.

7. Whenever, not being enumerated in the Pharmacopœia of the United States, it differs materially as to quality, purity, or strength from the standards laid down in any other recognized pharmacopœia, or from the standards fixed by the National Board of Health after consultation with the Board of Experts provided for in Sec. 6 of this act.

Provided, however, that the National Board of Health shall have power, with the approval of the Secretary of the Treasury, to exempt from the operations of this act such commercial articles used in the arts and in manufactures as may in their opinion be properly made exempt, and shall publish from time to time lists of the articles so exempted.

SEC. 14. The term medicine as used in this act shall be held to include all substances administered or applied for the prevention, treatment, or cure of disease, or for the alleviation of pain, in the body of man.

SEC. 15. Any person violating any of the provisions of this act shall be guilty of a misdemeanor, and upon conviction thereof shall be fined, not exceeding fifty dollars, for each offense.

SEC. 16. That this act shall take effect ninety days after its passage.

SEC. 17. That all acts and parts of acts inconsistent with this act be and they are hereby repealed.

Preservation of the Colors of Dried Plants.—According to M. Storbzl the slow immersion of the fresh plant in a boiling solution of one part of salicylic acid in six hundred parts of alcohol, and then shaking off superfluous moisture, previous to pressing in the usual way between blotting-paper, will more nearly preserve the natural color than any other method.

Valerianate of Quinine.—A curious instance of the difference between natural and artificial chemicals is presented by valerianate of quinine which, according to Messrs. Gehe, can only be prepared as a handsome salt if the natural acid be used. They state that the new stock cannot be made at present, owing to want of natural acid.

NOTES, QUERIES AND ANSWERS.

Under this heading we shall, to the best of our ability, endeavor to answer such questions addressed to us, as come within the scope of this journal, provided they are accompanied by the name and address of the writer. Answers to queries received after the 5th of the month will lie over until the next issue. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for the formula of an unusual, patented, or proprietary compound, always accompany the query with any information you may already possess regarding the locality in which it is used, its use and reputed effects, in order to enable us to make inquiry without waste of time and labor. When it can conveniently be done, send also a specimen of the label used on packages of the compound.

No. 837.—**Wine of Pepsin** (Connecticut).

The French pharmacopœia has two kinds of pepsin, namely *pepsine médicinale* and *pepsine acide amylacée*, of which the former is a yellowish, transparent, tough mass, of an acid taste, and soluble, though slowly, in water. The latter is a powder, composed of the "pepsine médicinale," some starch and tartaric acid. The French process for the preparation of pepsin directs to clarify the liquids, which result from the maceration of the sheeps' or pigs' stomachs, by means of litharge or subacetate of lead, and to throw down the excess of lead, in the filtrate, by means of sulphuretted hydrogen. This last step, however, is often injurious, as it sometimes happens that the excess of the gas when left with the solution too long, will introduce sulphur in some shape or other into the final product.

It is even at the present time doubtful whether the revisors of the French codex will abandon the old method and adopt the process of Scheffer, which latter yields, as is well known, an active product without the intervention of poisonous or disagreeable chemicals. And a wine of pepsin prepared with a pepsin produced by Scheffer's process answers all requirements and expectations.

Still, to answer your inquiry, we may state that some preparation of lead *may* be used for clarifying the macerates; but in this case we would rather use sulphuric acid to get rid of the last traces of lead. Macé recommends to use Malaga wine from the very beginning, and, although the wine is to a certain extent altered by the subsequent treatment with lead salts, yet it retains most of its flavor and, by the presence of a small percentage of alcohol, tends to preserve the liquid during the period of maceration. According to the same writer, a more active pepsin is obtained by using sheep's and pig's stomachs together, in the proportion of about six parts of the former and one part of the latter. He directs to cut thirty sheeps' and five pigs' stomachs lengthwise into halves, to empty and clean them rapidly, then to wash them in cold water, and to soak them for twenty-four hours in about seven pints of good Malaga wine. At the end of that time they are to be taken out, spread on a marble slab, and the mucous membrane scraped with a knife, so as to collect the scrapings, which are to be returned to the wine, and allowed to macerate in the latter for four days in a cool place, under occasional stirring. The whole is then transferred to a linen strainer and the residue gently pressed. Now add to the strained liquid equal parts of litharge and subacetate of lead in sufficient quantity until no more precipitation occurs. The whole mixture must be well stirred and allowed to stand for several hours, when a further small quantity of the precipitant is to be added. Whenever this does not throw down any further precipitate, the whole is once more thoroughly agitated, and then allowed to settle. Care should be taken that the amount of lead used in excess is as small as possible. Now pass first the clear liquid through a filter,

then pour the residue on and wash it with one pint of Malaga wine. To the clear filtrate add, very carefully, and by degrees, small quantities of dilute sulphuric acid, stirring after each addition, and allowing the surface layer of the liquid to become clear before adding any more acid. Towards the end the addition of acid must be very carefully adjusted, and when a sample of the clear liquid ceases to give a reaction with sulphuretted hydrogen, the process may be stopped. It is preferable, in this particular case, when approaching the point of neutralization of the lead, to add an alkaline sulphate, say sulphate of sodium, in sufficient quantity to be in slight excess. The liquid is then agitated with about four ounces of powdered charcoal, filtered and set aside in a cool place. Finally, it is again filtered and made up to 1 gallon with Malaga wine.

No. 838.—**Volkmann's Antiseptic Solution** (Ch. W.).

This is composed of

Thymol	1 part
Alcohol	10 parts
Glycerin	20 "
Water	100 "

No. 839.—**Tonga** (J. W. S.).

If you will turn to page 206 of our last year's volume, you will find all the information which, at the time, was accessible regarding this new drug. It is a vegetable remedy, first brought to London from the Fiji Islands by a Mr. Ryder, and placed in the hands of Prof. Ringer, who found it to be as represented, a prompt remedy in neuralgia. The name *tonga* was given to it by Mr. Ryder. According to the latter the natives of the Fiji Islands have used it for several years, and a European who married a chief's daughter learned these facts from his father-in-law, in whose family the knowledge of the composition (sic) of this remedy has been an heirloom for more than 200 years. Tonga as it reaches Europe is in form of loose bundles, about the size of a Florence flask, containing in the interior a mixture of bark, leaf, and woody fibre. Mr. Gerrard found a volatile alkaloid, which he provisionally named *tongine*, in the fibrous portion. The true botanical source of the various constituents of tonga will probably soon be ascertained.

Messrs. Allen & Hanburys, of London, have undertaken to manufacture and to put up this remedy for the proprietor, and this is in form of a fluid extract, which is simply named "Tonga." It may be had from Messrs. Schieffelin & Co., of New York, and other drug-houses.

No. 840.—**Chemical Puzzle.**

One of our correspondents writes: Will you please inform me through "Notes, Queries, and Answers," what chemical when added to water will turn it black, and then what chemical will bring it clear again?

We have concluded to leave the solution of this problem to our readers, and herewith invite their attention to it.

No. 842.—**Salicylic Acid and Potassium or Calcium Salts** (A. de E.).

This correspondent says: In your October number, p. 316, under answer to query 769, I find the remark, that "Potassium and calcium salts do not combine at all with salicylic acid," which statement does not agree with that of Fownes (in his Manual of Chemistry), viz., "Potassium phenate heated in a stream of carbon dioxide produces dipotassic salicylate up to 302° F., but above that temperature paraoxybenzoate," and "the basic calcium salt is formed by boiling salicylic acid with lime water; it separates as an insoluble powder."

If you will read the answer to query 769 again carefully, you will find that we have there quoted the results of the experiments of A. Schultz, made with a view of ascertaining the substances salicylic acid can combine with. Among the substances there mentioned are some (under 1) with which a *direct* combination of the acid is either possible or impossible. In the case of the salts mentioned under 2 and 3, the author must be understood to mean that salicylic acid will *decompose* some and not *decompose* others. The remark about potassium and calcium salts is, therefore, to be understood to mean that (according to the author's investigations, which may be readily repeated by following the directions quoted) salicylic acid in coming in contact with salts of potassium or calcium is too feeble to decompose them, but leaves them *always* intact. Of course, the carbonates must be excepted at all events. But the acetates, for instance, remain undecomposed. On the other hand, he says that the salts of sodium or ammonium, having weaker acids than salicylic acid, are decomposed by the latter.

No. 843.—**Battery Filling** (J. W. B.).

The sample of manganic oxide (black oxide of manganese) which you sent us, is a fair commercial specimen of this substance. It is merely a powdered *ore*, found native in many localities of Europe and also in this country, and is *never* entirely free from foreign substances. We have not made a complete analysis of the sample, for this cannot be expected of the Editors of this journal, but we have convinced ourselves that the usual concomitants, namely: iron, calcium, silica, and other substances are present.

No. 844.—**Spindle Oil** (B. J. & Co.).

This is a name applied to a product of the *distillation* of petroleum, which has a spec. grav. of 58° to 34° Baumé (=0.750 to 0.857 spec. grav.). As soon as the gravity of the distillate falls below 34° B., the recipient is changed, and the product now distilling over, which is much thicker and denser, is known as heavy spindle oil. This contains a good deal of paraffin in solution, and the latter increases in quantity, the heavier the distillate becomes. By chilling the product and subjecting it to powerful pressure the paraffin is separated from the liquid portion.

No. 845.—**To drive away Roaches** (Palisades).

Borax is a very good agent to drive and keep them away. By sprinkling it plentifully on the shelves, in the cupboards and other places, they will, in most cases, soon disappear. A still more effective mixture is equal parts of borax and insect powder. We have, however, occasionally made the experience that both of the above failed to accomplish the object. Very successful has been in our hands a saturated solution of naphthalin in alcohol. White naphthalin may be purchased for about twenty-five or thirty cents a pound, from Messrs. Page, Kidder & Fletcher, of New York. A mixture of equal parts of benzin and bisulphide of carbon is also recommended. But this merely kills the roaches which may be present; it leaves nothing behind to keep them away. For this reason, naphthalin, though it has a bad odor at first, is preferable. Care should be taken when using the above mentioned liquids, *not to approach them with a light.* Hager recommends to place pellets prepared from the following ingredients in the places frequented by the insects, or to insert the mass into the cracks and holes of the wood-work:

Tartar emetic, 20; powdered white hellebore, 20; flour, 20; sugar, 20; powdered bread, 40; glycerin, 50; and water, a sufficient quantity.

No. 846.—**Chloride of Gold Remedy** (Dr. W.).

The "Double Chloride of Gold Cure for Drunkenness; a tested and infallible Remedy, discovered by Dr. L. E. Keeley, Dwight, Ill., etc.," of which you sent us a sample, with pamphlets, has failed to yield us the smallest trace of gold, a result which might have been expected. Possibly it is present in homœopathic quantities. The "discoverer" asserts that two bottles effect a cure, price, $9.00. The remarkable versatility of the author is shown by his applying the "Gold Cure" to other baneful evils, of course with the most splendid success. There is a "Gold Cure for Neurasthenia; put up in pairs; $5.00 per pair." Also a "Gold Cure for Chronic Asthma; put up in pairs; $10.00 per pair." And finally, a "Gold Cure for the Opium or Morphine Habit; put up in pairs; $10.00 per pair." Further comments are unnecessary.

ITEMS.

The Botanical Museum of the University of Michigan has lately acquired by exchange 500 species of fungi from various parts of the world, collected by T. de Theremen. This museum now possesses upwards of 5,000 species of plants obtained from German collectors and a large collection from Alaska, collected by Prof. Harrington.

Illegal Pharmacy in France.—The Sisters of the Convent St. Charles, at St. Germain-Luval (Loire), were condemned to pay a fine of 25 francs by the Tribunal Correctional of Roanne, for the illegal practice of Pharmacy.

A Commercial Balance Sheet.—A correspondent of the *Herald* of New York, writing from Boston, says that a gentleman travelling down State street in Boston the other day picked up a small pocket memorandum book kept by a New York travelling salesman, and among other interesting items of this "highwayman's" career the following items will be of interest to the ungullible public, particularly to the innocent wives and sweethearts at home, as well as to silly girls in neighboring cities, also to the firms who put up the dollars:

Miles travelled.....	2,250	Goods sold for other firms.....	$5,600
Number of trunks..	2	Commissions from rival firms.....	280
Shown samples.....	61	Salary, $6 per day for forty days....	$240
Sold goods.....	34	Saved from daily expenses.....	$120
Been asked the news	56	Money put in savings bank.....	$500
Told the news.....	3	Cash on hand.....	$70
Lied.....	33	Got drunk.....	11
Didn't know.....	20	Badly set up.....	2
Been asked to drink	11	Slipped out on Hotel keepers.....	4
Drank.....	11	Cigars smoked.....	200
Changed politics...	17	Cigars given away..	3
Changed religion...	3	Number of days actual work.....	32
Daily expenses allowed by house...	$9	Number of days charged firm.....	40
Daily expenses actual.....	$6	Light wagons stove up.....	2
Been to church.....	0	Attended horse races.....	11
Accompanied girls from church home	17	Made on bets.....	$80
Girls flirted with...	42	Lost on bets.....	$55
Agreed to marry...	2	My actual profit for forty days... ..	$640
Expect trouble with.	1	Firm's actual profit for forty days....	$610
Kicked out of the house.....	2		
Left by back door...	3		
Dodged fare on railroad.....	5		
Number of persons cheated.....	34		
Tried to cheat. ..	61		
Hats ordered.....	3		
Suits of clothes made.....	2		

The Mediterranean Sponge Fisheries.—This fishery is principally carried on on the coasts of Greece, and on the African shores of the Mediterranean. The profitable nature of the trade has so developed the industry of sponge fishing that the annual returns, which a short time ago were but 20,000 francs, rose in 1878 to 2,000,000. The *Journal des Voyages*, from which we take these particulars, says that Greece now has 150 vessels engaged in this branch of fishing; 40 possess English diving apparatus, and the island of Egina alone has 24 vessels provided with the same apparatus, the rest belong to the islands of Kalymnos Symi, or the Kranidiotes. By the aid of this apparatus, the fishermen of Egina have surpassed those of the other islands, who were hitherto considered unrivalled. Each vessel (for diving operations) is manned by 10 to 15 sailors; the others by 4 to 5 only, representing in all about 1,000. Each vessel makes on an average four voyages per annum, and will obtain at most 1,000 kilograms of sponges, worth about 30,000 fr.; but apparently, notwithstanding the diver's dress, the task of these fishermen is a hard one. The *Journal des Voyages* has it that it is so dangerous that divers sometimes die suffocated, others become deaf, etc., etc. Imagine at what cost this elegant and useful article for the toilet, and for domestic use, is obtained, when human life is jeopardized to gain it.

The value is as follows: First-class sponges are sold at 35 to 40 francs the kilogram; second-class sponges only fetch 14 francs. The fishers pay a tax of ten per cent on the gross value.

Notwithstanding all its dangers and difficulties, the number of vessels embarked in this lucrative business goes on increasing, as well as the use of diving apparatus. The price of the latter is 5,400 francs, and it is estimated that some 300,000 fr. are thus invested. All the vessels together take about 140,000 kilograms of various qualities of sponges, worth in all nearly 2,060,000 francs. This industry is growing day by day.

Weather Probabilities.

February.—The mild spell with which January closes will probably continue well into this month, with the exception of a day or two, up to the 12th of the month, with balmy, spring-like weather prevailing in many parts, and snow rapidly disappearing. A couple of days of blustering weather with rain and snow will be followed by more storms and cold weather throughout Ontario and the Western United States.

This term will be followed about the 16th by storms of wind, rain and snow, previous to the setting in of a colder term.

With the beginning of the last week of the month, brilliant, mild, spring-like weather will again appear, melting the snow and rendering sleighing impossible in some localities.

A few days before the close of the month high winds are likely to prevail, with gales around New York and Long Island Sound and other points, with blustry weather in Canada and the Northern United States. The last two days are, however, likely to be fair, and the month will end with little snow on the ground.—From *Vennor's Almanac and Weather Record* (Am. News Co., N.Y.).

PHARMACEUTICAL CALENDAR.—February.

N. B.—The officers of Societies, Colleges of Pharmacy, Pharm. Associations, etc., will oblige us by forwarding schedules of their meetings, lists of officers, and any changes that may be desirable.

Date.	Society Meetings.
Tues. 1st.	Phila. Coll. Pharm.—Trust. Meet.
Thurs. 3d.	N. Y. Coll. Ph.—Trust. Meet.
	Massach. Coll. Ph.—Trust. Meet.
	Louisville Coll. Ph.—Pharm. Meet.
Fri. 4th.	Louisville Coll. Ph.—Alumni Meet.
Satur. 5th.	Connect. Pharm. Assoc.—Annual Meet. at Waterbury, Conn.
Mon. 7th.	Erie Co. Ph. Ass.—Mo' Meet. (at Buffalo).
Tues. 8th.	Kings Co. Ph. Soc.—Ann. M. (at Brooklyn).
	Chicago Coll. Ph.—Trust. Meet.
	Pittsburg Coll. Ph.—Trust. Meet.
	St. Louis Coll. Pharm.—Pharm. Meet.
	Iowa State Pharm. Assoc.—Annual Meet. at Des Moines.
	National Coll. Ph.—Trust. Meet.
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Thurs. 10th.	Newark Pharm. Assoc.—Mo' Meet.
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	Phila. Coll. Ph.—Alumni, Pharm. Meet.
	Maryland Coll. Ph.—Meet.
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Shown samples	91		
Sold goods	34	Salary, $6 per day for forty days	$240
Been asked the news	56		
Told the news	7	Saved from daily expenses	$120
Lied	35		
Didn't know	20	Money put in savings bank	$400
Been asked to drink	11		
Drank	11	Cash on hand	$70
Changed politics	17	Got drunk	11
Changed religion	3	Badly set on	2
Daily expenses allowed by house	$0	Slipped out on Hotel keepers	
Daily expenses actual	$6	Cigars smoked	90
Been to church	0	Cigars given away	
Accompanied girls from church home	17	Number of days actual work	32
Girls flirted with	42	Number of days charged firm	40
Agreed to marry	2	Light wagons stove up	2
Expect trouble with	1		
Kicked out of the house	2	Attended horse races	11
Left by back door	3	Made on bets	$40
Dodged fare on railroad	5	Lost on bets	$85
Number of persons cheated	34	My actual profit for forty days	$620
Tried to cheat	61	Firm's actual profit for forty days	$610
Hats ordered	3		
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